

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

GLEANINGS

IN BEE CULTURE

CONTENTS

Market Quotations	- 83
Stray Straws, by Dr. Miller	87
Pickings, by Stenog	- - - - 89
Conversations with Doolittle	- - 90
Editorials	- - - - - 91
The Drouth in Australia	- - - 91
Pure-food Bill in the Senate	- - - 92
No New Election	- - - 92
Cutting Alfalfa Before It is in Bloom	- 93
General Correspondence	- - - - 94
Fertilization in Confinement, <i>R. F. H.</i>	94
Mr. France Legally Elected, <i>Moore</i>	95
Government Aid for Bee-keepers	- 96
Pear-blight, <i>Johnson</i>	- - 97
In Memoriam of the Rambler, <i>Root</i>	- 99
Heads of Grain	- - - - 103
Echoes from Idaho	- - 103.
What Made the Bees Die so?	107
Best Methods of Queen-rearing	107
Notes of Travel	108
By A. I. Root	

THE A. I.
C MEDINA



Root Co.
OHIO

U.S.A.

Western Edition

ENTERED AT THE POSTOFFICE AT MEDINA, OHIO, AS SECOND-CLASS MATTER.

Ready for Your Orders!

We have in stock ready
for immediate delivery a

Carload of Root's Supplies

such as Dovetailed and Danzen-
baker Hives, Cowan Extrac-
tors, Sections, etc., etc. If you
want Root's goods be sure to
specify it in making your order
or inquiry. We also handle
local-made supplies. Let
us have your specifications
early so we may not disap-
point you when you need the
supplies.

~~~~~  
**Smith's Cash Store,**  
(Incorporated)  
San Francisco, Calif.

# Colorado Bee-keepers!

Get our prices before purchasing else-  
where. We are selling first-class make  
of goods at lower prices than the  
cheaper goods can be purchased for.  
If requiring Hives, Sections, Honey-  
extractors, Shipping-cases, Knives,  
Bee Smokers and Veils, Comb Founda-  
tion, or any thing else in the line of

## BEE-KEEPERS' SUPPLIES

you should remember that

**The L. A. Watkins Mdse. Co.**  
Denver, Colorado,

are headquarters for the State, and  
furnish local associations who can use  
as much as a carload at carload prices  
direct from the factory, or smaller lots  
from our well-furnished warerooms in  
Denver, at prices that defy competi-  
tion for equal quality of goods. We  
are agents for THE A. I. ROOT COM-  
PANY'S GOODS for Colorado, and want  
to hear from bee-keepers in need of  
supplies. We buy honey and wax.

**Let Us Hear from You.**

# Now Ready!

We have the largest stock of Root's  
goods that ever came to Kansas, and  
we are ready to supply your needs  
in the apiary. We can save you  
freight and time by buying of us.

**Danz. Hives, Weed New Pro-  
cess Foundation, Cowan  
Extractors, Smokers,**

and every thing that you will likely  
need. We are now booking orders  
for Buck's strain of Italian queens:  
Last year we were swamped with  
orders in the spring, so I wish to  
ask my customers to send in their  
orders early so as to avoid the rush.  
Send for 1903 catalog. The 1903 edi-  
tion of A B C of Bee Culture for sale.

~~~~~  
Carl F. Buck, Augusta, Kansas.
Butler County.



Announcement!

We desire to call the attention of all
bee-keepers in Washington, British
Columbia, and adjacent territory, that
we're now the Northwestern agents for

THE A. I. ROOT COMPANY,
and are prepared to furnish from stock
here, and at other Washington points,
any thing required by bee-keepers.
Send your specifications early. If we
do not have the goods wanted this will
enable us to get them in our next car-
load. Catalogs free.

LILLY, BOGARDUS & CO.,
Seattle, Washington.



Northern-grown Seeds, Trees and Plants,
Poultry and Bee Supplies, Spray Pumps,
Fertilizers and Garden-tools.

Honey Column.

GRADING-RULES.

FANCY.—All sections to be well filled, combs straight, firm ly attached to all four sides, the combs unsoiled by travel stain, or otherwise; all the cells sealed except an occasional cell, the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

CITY MARKETS.

DENVER.—Fancy white comb honey, \$3.50 per case of 24 sections; No. 1 white, \$3.00@ \$3.25; No. 2, \$2.50@ \$3.00. Extracted honey, 7½¢@8½¢. Beeswax wanted at 22¢@27¢, according to color and quality.

THE COLORADO HONEY PRODUCERS' ASS'N,
Jan. 22. 1440 Market St., Denver, Col.

NEW YORK.—Market quiet. No large arrivals, but enough stock to supply the demand. Fancy comb, 15¢; No. 1 comb, 13¢@14¢; buckwheat comb, 12¢@13¢. Beeswax worth 29¢; good demand and no stocks on hand.

FRANCIS H. LEGGETT & Co.,
Jan. 20. Franklin and Varick Sts., New York.

CHICAGO.—There is no change in the honey market from quotations given in last issue. The weather has moderated, and we hope that the ensuing two weeks will give us a better movement.

R. A. BURNETT & Co.,
Jan. 20. 199 South Water St., Chicago, Ill.

CINCINNATI.—The demand for comb honey has fallen off, which generally happens right after the holidays, although prices rule as before. White clover comb, 15½¢; extra fancy water white, 16¢; no demand for lower grades. Extracted honey in fair demand, and sells as follows: amber, by the barrel, 5¼¢@5½¢; in cans, 6¢; alfalfa, 7½¢; white clover, 7½¢@8½¢. Beeswax sells from 28 to 30 cts. per pound.

C. H. W. WEBER,
Jan. 20. 2146 Central Ave., Cincinnati, O.

DETROIT.—Not much honey in market, and demand fair. Comb honey, white A No. 1, 17¢; white No. 1, 14¢@15¢. Extracted, 8¢@8½¢. Beeswax, 28¢@30¢.

M. H. HUNT & SON,
Jan. 15. Bell Branch, Mich.

PHILADELPHIA.—Very little change in the prices of honey or wax since our last quotation, and call not very brisk, although some lots are moving off every day. We would quote fancy white comb, 15¢@16¢; No. 1, 14¢; No. 2, 13¢. Extracted, white 8¢; amber, 7¢. Beeswax, 29¢. We are producers of honey and do not handle on commission.

WM. A. SELSER
Jan. 10. 10 Vine St., Philadelphia, Pa.

SAN FRANCISCO.—Honey market as follows: Comb, per lb., 10¢@13¢. Extracted, water white, 6½¢@7¢; light amber, 6¢@6½¢; dark amber, 4¢@5¢. Beeswax, per lb., 28 cts.

E. H. SCHAEFFLE,
Jan. 17. San Francisco, Cal.

NEW YORK.—Demand for comb honey quiet on all grades, and prices show a downward tendency. Supply quite sufficient to meet demand, if not more. We quote fancy white at 15¢; No. 1 at 14¢; No. 2, 12¢@13¢; dark and buckwheat, 11¢@12¢. Extracted also quiet with abundant supplies with the exception of white clover. We quote white at 7¢; amber, 6½¢; dark, 6¢; common, in barrels, 60¢@65 per gallon. Beeswax firm at 29¢@30, with little supply.

HILDRETH & SEGRIKEN,
Jan. 23. 265-267 Greenwich St., New York, N. Y.

FOR SALE.—Light and buckwheat extracted honey in cans and kegs; sample, 8c.
I. J. STRINGHAM, 105 Park Pl., New York City.

FOR SALE.—White extracted honey from alfalfa in 60-lb. cans, at \$4.50 each; light amber honey mixed with Rocky Mountain bee-plant, fine flavor, \$4.20 each. Prices on small cans and pails on application.
M. P. RHOADS, Box 216, Las Animas, Colo.

FOR SALE.—Alfalfa water-white honey, 60-lb. cans, two in a case, at 7½¢; fancy basswood in 250-lb. bbls., 8¢; same in 60-lb. cans, two to a case, 9¢. We buy and sell for cash only.
E. R. PAHL & Co.,
294, 296 Broadway, Milwaukee, Wis.

WANTED.—Beeswax; highest market price paid. Write for price list.
BACH, BECKER & Co., Chicago, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity.
R. A. BURNETT & Co.,
199 South Water St., Chicago, Ill.

FOR SALE.—Extracted honey. Finest grades for table use. Prices quoted on application. Sample by mail, 10 cts. to pay for package and postage.
OREL L. HERSHISER,
301 Huntington Ave., Buffalo, N. Y.

We will be in the market for honey the coming season in carloads and less than carloads and would be glad to hear from producers everywhere what they will have to offer.
SEAVEY & FLARSHHEIM,
1318-1324 Union Avenue, Kansas City, Mo.

Our Advertisers.

THE DEMING CATALOG.

The 1903 catalog of the Deming Company, of Sale, Ohio is just off the press. As usual, our readers will look to it to exemplify in practical form the latest ideas in spraying orchards, vines, potatoes, shrubbery, etc. The Deming people have been so long engaged in the business of making sprayers, and their whole line has been brought up to such high efficiency in the estimation of spraying people, that it has become second nature to look to their catalog to show what is best adapted to any particular purpose. It includes hand, bucket, knapsack, barrel, mounted, and power sprayers. In certain sprayers of their line, notably the Century, Simplex, Peerless, and Success Knapsack sprayers, the mechanical agitation of the liquid, insuring perfect mixing of poison with the water, is worked out to a nicety. The wide adaptability and general usefulness of the line can not be realized without perusing the catalog. As usual, it will be mailed to any one writing for it, provided you mention this paper.

"BURPEE'S SEEDS GROW."

This famous motto of an equally famous seed-house is true in a double sense; for not only do Burpee's seeds grow when planted, but they grow constantly and very rapidly, year by year, in the favor and confidence of all who cultivate vegetables and flowers. So intimately is the name of this house associated with all that is best in seeds, that the advent of Burpee's Farm Annual is awaited each year as an event of real importance in planting-circles. Of this publication—well known and universally spoken of as "The Leading Amer can Seed Catalog"—the 1903 issue is especially noteworthy. It is an elegant book of 184 pages, with beautiful colored plates; a veritable storehouse of valuable information regarding choice flower and vegetable seeds, and mailed free to planters everywhere. It is much to be recognized as the largest mail-order seed-house in the world, but it is yet more to mail all over the world "The Best Seeds That Grow." Both of these distinctions can be truthfully claimed by BURPEE, Philadelphia.

To make cows pay, use Sharples Cream Separators. "Business Dairying" and cat. 288 free. W. Chester, Pa.

The Best Bee-goods in the World

are no better than those we make, and the chances are that they are not so good. If you buy of us **you will not be disappointed. We are undersold by no one.** Send for new catalog and price list and free copy of THE AMERICAN BEE-KEEPER; in its thirteenth year; 50 cents a year; especially for beginners.

**The W. T. Falconer Man'f'g Co.,
Jamestown, New York.**

W. M. Gerrish, Epping, New Hampshire, carries a full line of our goods at catalog prices. Order of him and save the freight.

I. J. Stringham, New York City 105 Park Place.

OUR 1903 CATALOG is yours for the asking. The supplies listed in it are practical and up-to-date. We furnish everything a bee-keeper uses, and will not be undersold. It will be a pleasure to quote you prices on any thing you need; **Freight Paid** to your R. R. station if you prefer. Bees and queens during the season. Apiaries, Glen Cove, Long Island.

Bee-keepers!

Send us a list of the goods you want and we will quote prices by return mail. Discounts on early orders.

L. C. Woodman, Grand Rapids, Mich.

It is a FACT



That our line of Bee-keepers' Supplies are some of the best goods in the world, and that our system of dealing with our trade is not excelled by anybody. Plenty of testimony from satisfied customers proves these things. Write and get our suggestions, our catalog, and our discounts for winter-time orders—ALL FREE. Largest stock of Bee-keepers' Supplies in Indiana.

C. M. SCOTT & CO.,

1004 East Washington Street,

Indianapolis, : Indiana.

"40 Years Among the Bees,"

BY DR. C. C. MILLER.



A Good Book by a
Well-known Bee-Keeper.
Every Bee-Keeper
will want to read it.

IT will contain over 300 pages, be bound in handsome cloth, printed on good book-paper, and illustrated with over 100 beautiful, original half-tone pictures, taken by Dr. Miller himself. The book will show in detail how Dr. Miller does things with bees.

The first few pages of the new book are devoted to an interesting biographical sketch of Dr. Miller, which finally tells how he happened to get into bee-keeping. Seventeen years ago he wrote a small book, called, "A Year Among the Bees," but that little work has been out of print for a number of years. While some of the matter used in the former book is found in the new one, it all reads like a good new story of successful bee-keeping by one of the masters.

How to Get a Copy of Dr. Miller's Book

The price of this new book is \$1.00, postpaid; or, if taken with the WEEKLY American Bee Journal for one year, BOTH will be sent for \$1.75.

Address the publishers,

GEORGE W. YORK & CO.,

144 & 146 E. Erie Street, CHICAGO, ILL.

If you have never seen the old American Bee Journal, write for a free sample copy and also a catalog of Bee-Keeper's Supplies.

ROOT'S GOODS AT ROOT'S PRICES.

Dittmer's Foundation.

RETAIL AND WHOLESALE.

This foundation is made by a process that produces the superior of any. It is the cleanest and purest. It has the brightest color and sweetest odor. It is the most transparent, because it has the thinnest base. It is tough, clear as crystal, and gives more sheets to the pound than any other make. **Working Wax into Foundation for Cash a Specialty. Beeswax Always Wanted at Highest Price.** Catalog giving full line of supplies, with prices and samples, free on application.

Cus. Dittmer, - Augusta, Wisconsin.

Marshfield Manufacturing Co.



Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of BEE-SUPPLIES. Write for FREE illustrated catalog and price list.

The Marshfield Manufacturing Company, Marshfield, Wis.



MUTH'S SPECIAL THE BEST

Cover and Bottom-board Warp-proof.

Finest lumber and workmanship. Cost us more, but we sell at same price as regular. Send for catalog and see special inducements.

THE FRED W. MUTH COMPANY, CINCINNATI, OHIO.

Honey and Bee-keepers' Supplies, Front and Walnut Sts.

G. B. Lewis Company,

WATERTOWN, WISCONSIN, U. S. A.

Bee-Keepers' Supplies

1903 Catalog Ready. If you have not been receiving a copy annually, send us your name and address, and one will be mailed to you free.

Special Offers. On all cash orders received before April 1st, 1903, we allow a discount of two per cent. To parties sending us an order for supplies amounting to \$10.00 or more at regular prices, we will make the following low rates on journals: *Gleanings in Bee Culture*, semi-monthly, one year, 50 cts.; *American Bee Journal*, weekly, one year, 70 cts.

C. M. Scott & Co., 1004 East Washington St., Indianapolis, Ind.
 L. C. Woodman, Grand Rapids, Michigan.
 The Fred W. Muth Co., S. W. cor. Walnut & Front, Cincinnati, Ohio.
 Fred W. Foulger & Sons, Ogden, Utah.
 Colorado Honey Producers' Association, 1440 Market St., Denver, Colo.
 Colorado Honey Producers' Assoc'n, R. C. Aiken, Mgr., Loveland, Colo.
 Grand Junction Fruit-growers' Association, Grand Junction, Colo.
 Robert Halle, Montrose, Colo.
 Pierce Seed & Produce Co., Pueblo, Colo.
 E. T. Abbott, St. Joseph, Mo.
 Chas. Dadant & Son, Hamilton, Ills.
 F. C. Erkel, 515 First Ave., N. E., Minneapolis, Minn.
 Lilly, Bogardus & Co., Seattle, Wash.
 Klauber, Mangenheim & Co., San Diego, Calif.
 J. K. Hill & Co., Uvalde, Texas.

OUR AGENCIES

THEY WILL FILL YOUR ORDER PROMPTLY

If you are located near any of those, send us your name and address, and write them for prices.

HEADQUARTERS FOR

BEE-SUPPLIES

"Root's Goods at Root's Factory Prices."

Complete stock for 1903 now on hand. Freight rates from Cincinnati are the lowest.

Prompt service is what I practice. Satisfaction guaranteed.

Langstroth Portico Hive and Standard Honey-jars at lowest prices.

You will save money buying from me. Catalog mailed free. Send for same.

Book orders for Golden Italian, Red-clover, and Carniolan queens For prices, refer to my catalog.

C. H. W. WEBER, : : CINCINNATI, OHIO.

Office and Salesroom, 2146-8 Central Ave.

Warehouses, Freeman and Central Aves.

GLEANINGS *OF THE* **BEE CULTURE**

A JOURNAL DEVOTED
 TO BEES,
 AND HONEY,
 AND HOME
 INTERESTS.

ILLUSTRATED
 SEMI-MONTHLY

Published by THE A. I. ROOT CO.,
 MEDINA, OHIO.
 \$1.00 PER YEAR

Vol. XXXI.

FEB. 1, 1903.

No. 3.



RAMBLER gone! We've lost a bright, racy writer, but, above all, a man with a true, honest heart. [Yes, indeed. See his obituary in another column.—Ed.]

UNLESS the bee-papers are laid away and bound at the end of the year some of them are likely to get lost, says G. M. Doolittle, p. 50. In this locality they don't wait to the end of the year to get lost, so the only safe way is to begin binding when the first number comes.

"I WANT gentle golden Italians, good honey-gatherers: are the yellow as good as the leather-colored bees?" writes a man asking reply in GLEANINGS. Taken as a whole, the leather-colored are probably the better bees; but there are good and poor in each kind. If you can have the very best of the goldens, you will have something better than the average leather-colored; but if you must shut your eyes and grab, you'd better grab out of the dark pile.

"WHERE is the best place to buy queens?" says an inquirer. Most of the queens I have bought came from The A. I. Root Co., and from what I hear of them they are quite reliable, and that is probably true of most or all of those who advertise in GLEANINGS. [I am glad you put in the last end of the sentence. I do not believe there is very much choice between queens put out by our old breeders who have had years of experience in the business.—Ed.]

A CORRESPONDENT in Missouri wishes to know whether he should continue to use "the Root eight-frame hive" for sections, or change to the ten-frame Dove-tail or Danz. hive. If you give your bees close attention, making sure that they always have enough stores, and giving a second story when ad-

visable, you may do best with the eight-frame. If you give them no more attention than other farmers usually do, a larger hive will be safer. A good way to determine the thing satisfactorily is to try a few of each kind side by side for three or four years.

WHEN I READ to the women-folks about A. I. Root being down in Cuba, I said, "Well, that will be all new to him for certain." One of the women replied, "He'll enjoy that more than anybody I know of;" and the other said, "Yes, but he'll be getting into trouble. I wouldn't trust him alone." Then I read on; and when I read, "When I got lost (as I felt sure I would)," three people smiled aloud. [Your women-folks know A. I. R. pretty well, I guess; but somehow he never gets into any very serious trouble.—Ed.]

"I WOULD LIKE to use the 4x5 sections, and can not on the eight-frame hives to run lengthwise; can I on the ten-frame hives?" is a query sent me. I suppose one is no better than the other for that purpose; but I know I'd use 4x5 sections on either if I wanted to. [In answer to the question, I would state that both the Root and the Lewis Co. can now furnish supers to take 4x5 sections lengthwise of the super for either the eight or ten frame hive. Possibly the other manufacturers do, but I have not seen their catalogs, so I can not give any definite statement on that point.—Ed.]

DELOS WOOD says someone claims that, if a swarm be returned to its hive, the bees will tear down the cells and not swarm again that season. Mr. Wood says his bees will swarm again the same or the next day, and asks my experience. Just the same as yours, friend Wood. To stop all swarming for the season I would have to keep returning for ten days or more, till the last young queen was out of its cell. [It is our experience that a returned swarm will swarm out the next day, and keep on doing so until there is nothing left of the colony; but I do not know of any authority that claims that returning a swarm to its hive will have the effect of having the bees tear down the cells and give up swarming.—Ed.]

NOT INFREQUENTLY the question is asked what to do with combs filled with pollen. On the other hand, Dzierzon discusses, in *Leipz. Bztg.*, how to secure extra combs of pollen, advising that, in some cases, colonies be kept queenless in order to secure them. Many, especially beginners, do not appreciate the value of a good supply of pollen in spring [Pollen in combs is good property; but it sometimes happens we have too many of them. In such a case, if they be soaked in a tub of water, and then be put in the extractor, the pollen can be thrown out.—ED.]

CALIFORNIA NATIONAL HONEY-PRODUCERS' ASSOCIATION, p. 57. Does that mean that California is a nation all by its lee-lane self? Well, they do beat the nation, anyhow, in some things. [You would think that California was almost a little nation by itself if you were to travel through it on a Pullman for days and days, and yet not get out of its borders. Why, just think of it! It takes several hours in a Pullman to go through a single county, or at least some of the counties are larger than some whole States. Yes, indeed, they beat us in some things.—ED.]

THAT RETINUE surrounding the queen is something after this fashion in this locality: Under normal circumstances, when a queen is traveling over the comb, no worker accompanies her. If she runs against the hind end of a worker, the worker will pay no more attention to her than to another worker. If, however, the worker is in such position that she can recognize the presence of the queen, whether the queen touches her or not, the worker will invariably squarely face the queen; and if the queen stands still *long enough* there will be a circle of bees all facing centrally. As soon, however, as the queen moves on, the circle breaks up, never to be formed again of the same bees.

SWARTHMORE deserves credit for emphasizing the need of young bees for queen-rearing, and giving a feasible plan for getting them, p. 57. For some, a good plan would be to move a full colony to a new stand, leaving a frame of brood or so in a hive on the old stand to catch the returning fielders. Two days later there would be no old bees in the removed colony, and, after taking what young bees were needed, it could be returned to the old stand. That may get some too young, but they will be older in a day or two, and it would avoid the few old ones that would be captured by Swarthmore's plan. [I have often used the latter plan that you describe, with very good results.—ED.]

YOU SAY, MR. EDITOR, p. 65, that the A B C has never said "the old queen leaves with the swarm." Well, then, what does become of the queen? Does she always remain in the old hive? I have known cases in which I feel pretty sure that the queen came out with the swarm, and there have been some cases in which it has been reported that the old queen was found in the hive

with the swarm after the swarm has hived. Do such things occur only in this locality? [This is a bad typographical error. The quotation in your first sentence should read, "The old queen *leads* the swarm." As it reads in your quotation, it is mere nonsense; but you will get the thought by reading the next sentence, even if the first one is queer. I was a little under the weather when the last journal went out, and was not able to read all the proofs.—ED.]

L. STACHELHAUSEN, p. 55, says I seem "to prefer a non-swarming race of bees to preventing swarming." My good friend, you misinterpret me, being, perhaps, misled by a certain troublesome editor who spoke, Dec. 1, of my "chasing that phantom of a strictly non-swarming race." I do not expect ever to reach that, and I do not wish to waste the bloom of my youth in a hopeless chase. But, as I have said in each number of GLEANINGS for this year, "I do not despair of finding some feasible plan of dealing with a colony that will leave it without the desire to swarm." So you see it's non-swarming I'm chasing after, not a non-swarming race, which is quite another thing. Your plan, mein guter Bruder, comes very close to the thing needed—closer than any thing else yet brought forth.

YOU ARE RIGHT, no doubt, Mr. Editor, in saying that the text-books don't say that the queen is among the first of the swarm, p. 65, and yet I should have made the same mistake as Delos Wood did; for until lately I think it has been the common thing (and I think it is more or less common now) to talk about the queen "leading out a swarm." [The statement has sometimes been made that the queen leads out a swarm, just as we say the sun rises, when neither is true. I have yet to find in any of our text-books, written within the last fifty years, any teaching to the effect that the queen leads out the swarm. I have known her to be the first out, and have heard her *zeep, zeep, zeep*; I have seen her come out of the entrance, and the bees followed right after; but the general rule is that the bees come first and the queen comes tumbling after.—ED.]

I THINK I see a quiet smile on the face of some when they read on page 66 about Congregationalists being not quite so stiff, formal, and perhaps aristocratic as Presbyterians. Bro. Root, there are some faulty in that way in both denominations, probably as many in one as the other, and you can't tell a Congregationalist from a Presbyterian with a high-power microscope by his life or belief, unless you ask him about his church government; and not one in ten can tell you the difference in church government. Some of these days they'll all be shaken up together in the same bag, and then turned out as Presbyterians. [The reader is hereby informed that A. I. R. is a Congregationalist and Dr. Miller is a Presbyterian. The doctor does not

like to be classed as any "badder" or any "stiffneckeder" than A. I. R. But, joking aside, there is a lot of hard sense in what the doctor says. There are several of our denominations that might be merged together. It is as foolish to have several weak churches struggling in a small town, each grasping for supremacy, as it is to have several weak nuclei for the purpose of getting honey. One good strong church, with denominational differences cast aside, is like a good strong colony of bees.—Ed.]

So YOU'VE GOT a "naughty mobile," eh, Mr. Editor? It may not kill you as many times as a fractious horse, but how about other people's horses if you're all the time "coming down the road at a terrific clip"? All the same, I wish I had one. [That is one trouble with these self-propelled machines—they scare horses on country roads; but a great deal of this scaring is due to carelessness, indifference, or recklessness on the part of the chauffeur, or driver, of the machine. If one attempts to go clattering by a timid horse driven by a still more timid woman, and in so doing causes an accident, the "naughty" chauffeur ought to be taught a severe lesson. "Going down the road at a terrific clip"—why, I meant when the road was clear, and no horses were in the way. The "naughty" mobile is not here yet, but I shall expect it in a few days.—Ed.]

YOU MAY REMEMBER, Mr. Editor, how you and I tried one time to extract from both sides of a comb at once, and failed. Well, F. Blondet, of Brazil, says it is a success with him. I send you a picture of his machine, published in *Gazette Apicole de France*. [Well, no, doctor, we did not fail—we gave it up as impracticable. I succeeded in throwing honey out of the combs; but when it was very thick or when the combs were cold, there was too much residue honey in the combs. In a locality subject to a great deal of moisture, the honey thin, and the atmosphere very warm, an extractor arranged so that the combs stand like the spokes of a wheel will throw out the honey at both sides at once, almost as satisfactorily as the ordinary machines. I will tell you what, doctor—I have a feeling that such an extractor, with power attached to it, will do the work slick and clean with thick and thin honey; but a high rotative speed would have to be attained. I am studying up the gasoline-engine for two reasons: First, so that I may be able to run a "naughty" mobile; and, second, that I may be able to suggest some sort of combination of gasoline-engine and a honey-extractor. I have the plan all worked out in my own mind, and it works beautifully (in my own mind). See editorials.—Ed.]



Slowly northward climbs the sun,
Bringing cheer and pleasure;
Life is in his beaming disk,—
Blessings without measure.

The *Irish Bee Journal* says that Maeterlinck's *Life of the Bee* has been approved by the committee appointed by the Irish Bee-keepers' Association, and is included in the course for expert examination. It is very likely they will conclude some day that that book is not a suitable guide for bee-keepers.

The page containing Pickings in the last issue went to press in an uncorrected condition—that is, the proof was not corrected. The editor was sick at home, and did not revise the press proof, as usual, and hence the errors. While this is very provoking to us, the reader will not lose the meaning by the wrong letter appearing. Typographical errors are like some kinds of vermin—hard to catch, and still harder to kill. Sometimes a type breaks off and makes bad work, especially with figures. We shall in the future bestow extra care on our proofs, and still more on their correction. Dr. Miller has my thanks for calling my attention to this.

The necessity of co-operation among bee-keepers is as warmly discussed in Europe as here. The subject is well illustrated by the following, which I clip from that always interesting exchange, the *Irish Bee Journal*. It was written by Mr. T. Kirwan, Dunmore, Ireland:

I have just returned from Dublin. While there I always take a look at the grocers' windows for section honey, and go in and examine for finish, etc., and to see what particular section is used, and at what prices bought from the bee-keeper. This last time, even though the season past was the very worst ever known, I saw some of the finest section honey I ever saw for sale in shop windows in Dublin, and I was told by the grocers that it was bought at from 5s. to 6s. per doz., or from 2s. to 1s. 6d. under market price at the Federation at present, and at probably 3s. per doz. less than after-Christmas prices. It is quite plain that those sellers are not members of the Federation, and that they, in consequence, are selling entirely at the mercy of the grocers, losing at so much per section as would get them, in one year's sale, a share in the Federation and the advantages of membership, and value for their honey, instead of glutting the honey market, and keeping the prices down for themselves more than for other bee-keepers. It is also quite plain that they know nothing of the advantages of the Federation nor of the *Irish Bee Journal*. It is the interest of every member of the Federation, just as it is the interest of those bee-keepers themselves, that they should be induced to join the Federation, and not be keeping the price of honey down for themselves at least 25 per cent more than it would otherwise be.

The editor adds that Mr. Kirwan is accustomed to market over \$1000 worth of hon-

I have no hesitation in saying your ABC is the best bee book ever published, and up to date in every way.
W. P. MEADOWS.
Syston (near Leicester), England.

ey per annum. The shilling here mentioned should be reckoned as a "quarter" (25 cents) in our money.

W

The readers of GLEANINGS all know that Mr. Eugene Secor has for years been the poet laureate of American bee-keepers. I don't think he ever sought the position, but it fell to him by common consent. In addition to numerous effusions from his muse that have appeared in these columns he has just published a neat little poem called *The Hollow*. It is a review of his boyhood days in the eastern part of New York, where he was born. I give here the first stanza, of which there are 24 in the book.

On a certain small farm near the rugged old Highlands
Where the Hudson has worn its way through,
Leaving points that jut out to greet picturesque islands
Past which Henrick steamed north with his crew;
Within sound of the guns at West Point—Death atraining—

And the bellowing whistles of trade,
There, between rocky hills, on poor soil, uncomplaining,

Is the place where eleven youngsters played.

It is not clear who this Henrick (or Hendrick) was who steamed up the Hudson. If it was the Dutchman who gave a name to that river, I fear his steaming must have been over a cook-stove, as he had been dead 200 years when Fulton first applied steam to boats. But that's a small matter. The whole book will touch a sympathetic chord in every heart. Mr. Secor describes well the incidents of farm life, schoolboy days, hunting, etc. The book is elegantly printed, and is a gem throughout. There seems to be no price set on it. I would advise all to write to Mr. Secor and get a copy, for it is a nice ornament on any center-table.



AGE OF AND POLLEN IN BROOD-COMBS.

"Good morning, Mr. Doolittle. I see you are busy this morning."

"Well, perhaps no more than usual, Mr. Brown. The practical bee-keeper can always find something to do, winter and summer. He is something like the practical farmer, who, whenever he takes a vacation, must always leave something which he would almost as soon do as to take the vacation. But I am not too busy to have a little chat with you if you have anything you would like to know along the apicultural line."

"Thank you. I am looking over some old combs which I have, preparatory for next season, and I came across some yesterday that are eight or ten years old, and the cells seemed so small to me that I won-

dered if they should not be renewed. How many years can combs be used for brooding purposes before they want renewing?"

"I have combs in my hives which have been in constant use in the brood-chamber for 25 years; and, while the cells do appear small in looking at them, yet, so far as I can see, it makes no difference in the size of the bees emerging from these cells."

"Is that possible? I was reading a short time ago in one of my papers that brood-combs should be renewed every six or seven years, or else the bees would become too small to be of value; and a few years ago a foundation-maker advised me to melt up all my old combs and bring him the wax therefrom, from which he would make me foundation for the bees so that the cells from this would give me bigger bees than could be obtained from my old comb; and here you are talking about no perceptible difference in the size of bees when the combs are 25 years old."

"I know that it has been talked that combs should be renewed every 5, 10, 15, or 20 years, and such a course might be to the advantage of the foundation-manufacturers; but I have yet to see the comb which I ever thought it advisable to throw away on account of the age of it. If you are surprised at what I have said to you, you doubtless will be more so when I tell you that an old bee-keeper told me once, when we were talking on these matters, that he had combs which had been in constant use for brood-rearing purposes for 40 years, and yet, so far as any one could see, there was no perceptible difference in the looks of bees coming from these combs."

"But have you never seen lots of small bees in certain hives? I have."

"Yes, I have seen plenty of smaller bees in colonies; but I do not remember seeing a greater difference in those colonies having the older combs, as compared with those having combs more lately built. All bees, when first emerged from the cells, look small; but wait till they are from 48 to 72 hours old, and it will be seen that they look altogether different, especially during a honey-flow."

"Do you argue that a bee grows after it emerges from its cell?"

"I certainly do. Some seem to think that bees do not grow any after they cut out of the cells; but I think that a little careful observation will satisfy any one that the young bee 'plumps out' considerably after it emerges from the cell."

"Then you think that the size of the cell has little or nothing to do with the size of the bee reared therein."

"I do not know that I should wish to say just that; but I do not think it has so much to do with the size of the bees as some would have us suppose. Several times during past years I have compelled the bees to rear workers in drone-cells, and, so far as I could discover, using the closest scrutiny, said bees were not a whit larger three days after emerging than were those of the same

age emerging from combs from 15 to 25 years old."

"But, does not each bee leave a shed-off skin in the cell at the time of emerging?"

"It is true that each emerging bee leaves a slight cocoon or lining in the cell; but as this cocoon is much thicker at the base of the cell than at the sides, and so thin at any spot that it is hardly perceptible, no bad results seem to arise therefrom."

"Then you think I will be all right in using these eight to ten year combs which I have?"

"Yes. I believe it is always safe to use combs as long as they are in good condition, and old combs have the advantage of being better for the bees during the winter than new; consequently I have no thoughts of throwing away my 25-year-old combs at present."

"Well, I am glad I had this talk with you, for it has saved my combs, which I had hated to destroy. But some of them have much pollen in them. How am I to get that removed?"

"I find that the bees will do this the best of any thing; and unless the pollen is old and hard, it will help them much at early brood-rearing if you give each colony one of these combs containing pollen early in the spring before they can secure it from the fields. This is the way I dispose of all combs heavy with pollen which are carried over winter."

"But a part of the combs containing pollen have been off the hives for three or four years, and it seems to have hardened in the cells, so I judge the bees can not remove it."

"I have had a few combs like these, and I place such in tepid water, and allow them to remain thus for a few days, when the pollen will all be soaked soft; and by putting them in the extractor after this, the most or all of it can be thrown out. I have so few that I do not wish to dirty up the extractor for them. I shake what I can out of the combs after the soaking process, when the combs are put in sweetened water for a few hours, and then given to the bees, which will clean them up as good as new. In fact, I think this the better way to work at all times, as it incites the bees to activity, cleans the combs, and produces more brood than would otherwise be reared."

"I thought of throwing these combs containing old pollen into the solar wax-extractor, and not trying to save them, even if I did preserve those having no pollen."

"I would not do this, even did I intend to melt these combs."

"Why? Is not that the best way to get the wax from them?"

"It is the best way to get *no* wax from them. I find that where there is much pollen in combs thus melted, said pollen will absorb all the wax there is in these combs, and quite a little more from other combs which may be in with this. Since discovering this fact I am careful how any pollen is allowed to go into the solar wax-

extractor, as pollen is a great absorbent of melted wax."

"How would you render such combs then?"

"If combs containing much pollen are to be rendered for wax it should be done by means of boiling water, as the water in agitation from boiling dissolves the pollen as well as to liquefy the wax, thus allowing the wax to escape without being absorbed by the pollen."



ON page 104 of this issue our readers will find a picture of the Chicago Northwestern Bee-keepers' convention held last December. Those who have never seen a large crowd of men so enthusiastic on the subject of bees that they almost begrudged the time spent in taking the picture can not realize how much they have missed. It is a pleasure to shake hands with those just starting in; but it is a greater pleasure to meet the old veterans whom we know so well by reason of the bee-papers. Go and find out.

DEEP SNOWS AND CLOVER.

WE are getting an old-fashioned winter—fine sleighing everywhere, deep snow—quite like the weather we used to have in our younger days; and don't you remember when we used to have those old-fashioned winters we had old-fashioned clover-honey crops? Some one has said that heavy deep snows, continuing over a good portion of the winter means a heavy and luxuriant growth of clover, and that means honey of course. I believe myself there is an intimate relation between heavy snows during winter and a crop of clover honey in summer.

THE DROUTH IN AUSTRALIA; THE INHABITANTS OF THE RAIN-BELT.

MR. H. L. JONES, of Goodna, Aus., one of the representative bee-keepers of that country, writes that his people are having the most disastrous drouth they have ever known, and that at least 80 per cent of the cattle have died; so also have the forest-trees by the thousands, from lack of moisture. Bees, as a natural result, he says, have had a fearful time. While we sympathize with our friends on the other side of the globe, we hope that condition will not swing around to this side. After all, when we compare the drouths in Texas, California, and Colorado, it seems as if the portion in the eastern and central part of the United States through that part of the country

known as the rain-belt were the freest from the extremes of weather conditions of any place on the globe. We who live in this favored section ought to consider ourselves fortunate.

THE PURE-FOOD BILL BEING HELD UP IN THE SENATE.

The pure-food bill that passed the House is being held up in Senate. If you will look over the original vote in the house you will see that, on the day the bill passed, only about a fourth or a third of the members were present. All the rest "dodged." Those that remained had stamina enough to stand up for their colors, and vote their honest convictions. If it is not held up in the Senate as now seems probable the same game may be played over again. The bill is being shoved over from one time to another; and the obvious purpose is to carry it past the time of this session. It is conceded by the friends of it that it will pass overwhelmingly in the Senate, *if it can be brought to a vote*, for the Senators will not dare to vote against it. But the glucose people, and those engaged in the business of adulterating food products, realize that their best tactics is to delay.

The thing for our readers to do is to keep up the pressure—get in touch with the men, the politicians, who make your Senators. Get them to write to those same Senators, who, perhaps, are inclined to postpone.

It would be a monstrous shame, and no credit to the Senate, if this bill fails to pass. Keep up your letter-writing, even if you have already written. But your best work will be to write to the prominent politicians who have influence with your Senators. Do not forget that every State has two Senators. Find out who those men are, and then address them at the United States Senate, Washington, D. C.

NO NEW ELECTION TO BE CALLED; MR. N. E. FRANCE TO QUALIFY AS GENERAL MANAGER.

In this issue will be found a further statement in regard to the Association matter. While we may regret the clause in the ballot that has been construed as electioneering for Mr. France, I am now convinced we can not get back of the election we held in the month of December as the constitution provides. To hold another election at some *other time* would, I believe, be unconstitutional and illegal, as Attorney Moore says. Several other lawyer beekeepers and good parliamentarians in the ranks have given precisely the same opinion. In view of this the Directors, I understand, or a majority of them, have decided against calling a new election, although I am satisfied they would be glad to do so if it could be done without making the situation tenfold worse than it is, and confusion worse confounded. I had hoped one might be called.

Mr. France has been requested to quali-

fy, and has submitted his bond to the Directors for their approval. We shall soon be ready for business. Now let us, one and all, stop our wrangling, stand by the constitution, work for the Association, and move "on to victory," as Mr. Moore says. There is much important work to be done, and I believe Mr. France to be equal to the occasion. If he is not, let us put in the man who is, at the election next December.

POWER EXTRACTORS; A QUART OF GASOLINE FOR A WHOLE DAY'S EXTRACTING.

In this issue, in Straws, I have made reference to the fact that I was studying up gasoline-engines with a view of getting one rigged to an extractor so that the engine and extractor would be a common commodity in bee-supply catalogs. As I have said heretofore in these columns, a high rotative speed can not be secured by hand-turning—that is, turning a crank—at least, not high enough to get the combs clean. My experience in extracting in California (and Mr. Mendleson put me at the machine and made me earn my bread that day by the sweat of my brow) teaches me that at least the large machines should be run by power, to save honey as well as manual strength. The result of my studies along the line of gasoline-engines is such that I am now thoroughly convinced that such an engine can be satisfactorily coupled to an extractor. I have roughly estimated that a quart of gasoline would take care of a big extracting in one day. Just contrast that with the hire per day of a man to turn one of those big machines two months in the year in California, and consider the further fact that the little motor as well as the man could be used for other purposes too numerous to mention.

But some will say that the speed of a gasoline-engine is constant, and that some combs can't stand the speed of others. True; but a gasoline-motor can be throttled to a certain extent, and adapted to any speed; and it is done to a great extent in the automobile. But in the case of the extractor it would be more practicable to leave the speed of the engine constant and use the roller and disk transmission to give a variable speed from the lowest to the highest point without jar or bang. Of course, as intimated above, some extracting-combs can be rotated at a higher speed than others. It is a common practice to put combs of equal age or strength into the extractor at a time, and then extract the weak ones at a whirl by themselves.

Now, then, by a power extractor and a variable speed that can be controlled by means of a lever, either by hand or foot, one man could do the uncapping and extracting and a much more thorough job than two men could do by hand. My impression now is that the gasoline-engine will not be so very expensive; and when that day arrives, no extensive extracted-honey man will

think of trying to sling his honey out by hand.

I should not, perhaps, have begun the study of the gasoline-engine with such real enjoyment had it not been for the incentive of the "naughty" mobile; but when I saw how simply one of those little motors could be adapted to an extractor, a new and interesting field of investigation was opened up. Why, the gasoline-engine in its practical form to-day is only about ten years old, although the gas-engine has been known for a good many years.

I suppose that some of you will think I am a little wild when I say that I think a quart of gasoline will do a big day's work in extracting. What do you think of this? A gallon of gasoline (worth 10 cts. by the barrel) has driven a two-passenger four-horse-power automobile with two passengers 40 miles over the road, the whole outfit weighing about 1000 lbs. The *average* fuel consumption is a gallon to 20 or 30 miles. Contrast this with horse feed, oats at 37 cents a bushel, and hay at \$14.00 a ton. Contrast a quart of gasoline (worth 2½ cts. in Medina) with a man at \$1.50 a day, who sometimes can not be had for love or money just at the height of the season.

N. B.—Don't ask us to supply power outfits just yet.

CUTTING ALFALFA BEFORE IT IS IN BLOOM; PROOF THAT IT DOES NOT PAY.

In our Jan. 1st issue are some extracts from Bulletin 114, of the Kansas Agricultural Station, to the effect that alfalfa hay cut after coming into bloom made a better hay for stock, and had a greater food value than that cut when it is in full bloom. I am in receipt of a bulletin sent by Mr. Frank Raufuss, from the Experiment Station at Fort Collins, Col., that goes to show very strongly that alfalfa cut in full bloom not only yields *more* hay, but actually has *more* nutritive value than when cut early. Mr. Raufuss, in referring to this bulletin, says:

Friend Ernest:—I have just read your article on cutting alfalfa in your issue for Jan. 1st. It seems that you do not get all the Experiment Station bulletins, as the Colorado station has issued a bulletin lately on this subject, which puts the matter in an entirely different light. Inclosed I send you the bulletin referred to, and I hope you will quote portions of it.

I know that many extensive cattle-growers, not dairymen, hold that it pays them to let the alfalfa come to full bloom before cutting, and Prof. Headden seems to have come to the same conclusion in his experiments.

FRANK RAUFUSS.

Denver, Col., Jan. 9.

From the bulletin above mentioned I make the following extracts, which will speak for themselves:

When we express results in percentages we do not give the actual amounts produced per acre unless we also state the weight of hay produced. This is an important factor, and one which we must take into account. We usually assume that this is thoroughly understood, and that it is accepted as a fact that the crop increases in weight from the time of budding till it reaches or slightly passes full bloom, and then decreases. The amount of this increase will vary with a number of conditions; but the following figures, based upon the results of observation, may serve to give a definite idea of how much this increase amounts to. If we cut enough alfalfa in bud to make 100 lbs. of hay,

the same alfalfa would make 126 lbs. if allowed to stand till in half bloom, and 145 lbs. if allowed to stand till in full bloom. If allowed to stand longer it would decrease. If the question were, "When shall we cut alfalfa in order to make the most hay?" the answer would be, "When it is in full bloom." The question as presented to us is, "When is the *best time* to cut alfalfa?" This time is evidently that at which we shall have, not the largest yield of hay, nor of the best quality, but the largest yield of digestible food ingredients. This answer considers two factors—composition and digestibility. Every feeder will mentally add, "But there are other things to be considered," which is true, but it is assumed that the animals will eat the hay of which we are writing, and will relish it.

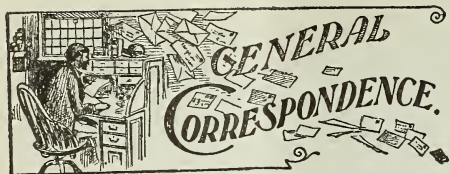
We have given the amounts of hay which the same quantity of alfalfa would give when in bud, in half bloom, and in full bloom, using the figures obtained for our Colorado alfalfa. The 100 lbs. of early-cut hay will contain 15 lbs. of albuminoids and 1.5 lbs. of amids; the 126 lbs. of hay, alfalfa cut in half bloom, will contain 15.8 lbs. of albuminoids and 2.9 lbs. of amids; the 145 lbs. of hay cut in full bloom will contain 19 lbs. of albuminoids and 2 lbs. of amids. Leaving the value of the amids of the question, for they are assumed to have only a small value as compared with albuminoids, and reducing these figures to the basis of a pound, we find the relative values to be 1.16 for the early cutting, 1.00 for that cut in half bloom, and 1.08 for that cut in full bloom. Or, stated otherwise, 86.2 lbs. of alfalfa hay cut in bud, or 92.6 lbs. cut in full bloom are equal in value, using the albuminoids as the criterion, to 100 lbs. of alfalfa hay cut in full bloom, so that alfalfa hay cut in half bloom is inferior to that cut in full bloom, and still more inferior to that cut in bud. In this statement we assume that the albuminoids are equally digestible at the three different stages of development here specified. If this be true, the largest amount of digestible proteids would be obtained by cutting in full bloom; for while the relative values of the hay cut in bud to that cut in full bloom is as 100 to 107, the yield is about 100 to 145, leaving an advantage of 88 lbs. of hay on each 145 lbs. of hay cut in full bloom. These figures refer to the first cutting. . .

The feeding experiments are decidedly in favor of the early cutting, calculating the value on pound for pound of hay produced. But if we calculate its value in terms of beef produced per acre, we come to the same conclusion at which we arrived from the consideration of its chemical composition and the relative crops produced at the respective periods. Mr. Mills summarized the results of his three seasons' feeding as follows: That to produce one pound of gain, beef, it requires 18.21 lbs. of hay of the early cut; 33.44 lbs. of the medium cut; 23.97 lbs. of the late cut (p. 11, Bulletin 44). But we have seen that the relative quantities of the early, medium, and late cut are 100, 126, and 145. Accordingly we would obtain for the values of the respective cuts in terms of beef, 5.4 lbs. for the early, 8.8 lbs. for the medium, and 6.0 for the late cut. We would, therefore, answer the question in so far as it pertains to the first cutting, that the best time to cut alfalfa is at the period of full bloom, for at this period we not only get the largest amount of hay, but also the largest return in pounds of beef per acre.

The results of feeding experiments with the second cutting lead to the conclusion that the best time to cut this crop is what Mr. Mills designated his medium cut.

I conclude that, after allowing for a little latitude in the use of the terms "half bloom," "full bloom," "late bloom," etc., the time to cut alfalfa in order to get the greatest value per acre is at the period of full bloom, and that there is a period of about a week during which its value is essentially constant.

Inasmuch as Prof. Headden has been erroneously quoted as one who believes that alfalfa hay should be cut before it is in full bloom, the extracts put an entirely new phase on the matter before us. For Colorado, at least, there is not much danger that the ranchers, if they follow the advice of the Experiment Station, will cut their hay too early for the bee-keeper. Prof. Headden is a very accurate, careful, scientific man; and I think it is reasonable to assume that he is probably right, rather than the Kansas Experiment Station, which has not given this matter of alfalfa nearly the attention that the Colorado Station has.



FERTILIZATION IN CONFINEMENT.

Failure of the Experiment to Mate Queens in a Tent 30 Feet High, a la Davitte; Mating Queens and Drones in a Large Glass Carboy Reported to be a Success; some Interesting Suggestions.

BY R. F. HOLTERMANN.

The question of controlling fertilization with queens is one of varying interest. Time and again it has come to the front, and again taken a less prominent place. When with D. A. Jones, of Beeton, Ontario, as a student, 22 years ago, the question was often discussed; and, aside from fertilizing queens on various islands in the Georgian Bay, nothing came of it. I remember well the operations in connection with the islands were carried on at great expense. Aside from the expense of keeping and getting men there, and shipping nuclei there and back, there was a great loss of queens. If I mistake not, in the act of copulation the drone perishes; that and perhaps the natural condition of the queen caused both to drop, and probably many queens were lost in the water.

The next time the question was prominently brought to my attention was at the International Bee-keepers' Convention at Detroit, when Prof. McLean gave the results of his test under the direction and expense of the government at Washington. I was at the convention, and Prof. McLean struck me as a man thoroughly in line with his work, but a man who lacked, as a beginning for his work, much practical experience which might have been obtained from many bee-keepers who attended that convention.

The next deep impression which the question made upon bee-keepers was when Mr. Hutchinson, in his *Review*, brought the question forward. I wrote to Mr. Davitte, and received a very kind reply. He is certainly honestly convinced that he made a success of this method of fertilization. We know that he was unable to answer certain questions Editor Hutchinson asked, but that does not prove that they were not answered.

This resulted in the erection of a large tent of netting fastened on a framework 25 ft. high and nearly 30 ft. in diameter. Great pressure of work in connection with honey production prevented me from making as extensive tests as I should have liked, but I had on the side between the tent and the bee-yard, which contained from 90

to 185 colonies, a covered shed with board back. In this board back, fly-holes were bored, covered at will. On shelves the nuclei with virgin queens were placed. On the other side of the tent two colonies with choice drones were placed; the entrances were guarded, as also were the entrances of nuclei, with perforated metal. The drones had liberty only through the fly-holes into the tent; and, more, these drones knew not what greater liberty meant than what the tent afforded. I mention this because I consider it very important. Now as to results.

A large number of drones flew and returned to the hives. To my knowledge, not a queen entered the tent. They remained unfertile as long as the perforated metal was kept at the entrance. In two cases, after 15 days I removed the metal, and the queens were then mated. Frequently, however, about the middle of the day I saw the young queen attempting to get out through the perforated metal, and I pointed this out to a young man I took as a student for the summer.

Many would say this is complete proof that queens can not be fertilized in the way attempted; but I am not so sure, even now. The queens were in nuclei, practically, between the tent and the main apiary. There were, perhaps, 200 drones flying on the side which had the perforated-metal entrance to one on the open side. Did this cause the queens to attempt to get out in this direction? Perhaps it did—some may tell.

It was rather a surprise to me that practically not a bee journal has noticed the announcement of Mr. Rowsome, another ex-student of mine, who is lecturer on bee-keeping at the Ontario Agricultural College, Guelph, Ontario, and who spoke of this very method when with me, but in which he did not get much encouragement from me. In his report, Ontario Agricultural College, 1901, page 125, Mr. Rowsome states:

Some have tried buildings of netting and also of glass; but queens and drones fly directly to the netting or glass, and devote their whole attention to getting out, without seeing each other. Last July I made the following experiment: I placed a large carboy of glass, neck downward, and introduced two virgin queens into it. As they were flying up the glass sides of the carboy, trying to get out, a dozen drones which were in a cage were introduced also. The drones immediately fluttered up the glass to the queens above, and coition took place. This experiment was tried with eight queens in all, and seven were fertilized. The eighth may not have been virgin before being introduced into the carboy. A little patience is sometimes necessary. When drones do not see a queen the drones and queens must be shaken down to the bottom of the carboy so as to induce them again to flutter up the glass; and when drones and queens are flying with their wings almost touching, coition is almost sure to take place.

In conclusion led me to ask, "Can we afford to override selection in nature to the extent of giving to (other things being equal) the less active drone the power to influence the future worker bee? Is variety and human selection better than natural? It may be desirable for the queen-breeder who has

to guarantee variety; but is it for the practical honey-producer? For my part I shall not attempt to answer the question in this article.

Brantford, Ontario, Canada.

[We are greatly interested to know about that mammoth queen-mating tent 20 feet high and 30 feet in diameter, constructed along the lines suggested by Mr. Davitte in the *Review* and on p. 348 of our Apr. 15th issue, 1901. The experiment was a success in that you were able to get the drones to fly out and in; and so far as *they* were concerned they believed they had the range of the whole wide world; but why the *queens* did not fly out is a mystery that remains to be solved. I can only suggest that if while you had that big tent, and the school of drones was circulating around in it, you had taken several virgin queens of the right age and thrown them up in the air, copulation might have taken place. You would then, of course, have to step inside to catch the young queens as soon as they dropped with their companion.

Like yourself, I do not consider the experiment a failure. If some means could be devised by which the queens could have been coaxed out into the inclosure through the unobstructed entrances, instead of trying to squeeze through the metal that barred them from all outdoors, the plan would have worked. The greatest fear I had was that the drones could not be made to fly out into an inclosure without bumping their heads against the netting in a vain attempt to escape. So far I believe you have demonstrated that such a part of the work can be done. It remains to go only one step further, and get queens to go out also. I would suggest that, if the experiment is to be repeated, that a young virgin of flying age be put into a nucleus having nothing but brood and hatching bees. It would then be possible to shut up the outer entrance, leaving only the entrance leading into the tent. If a dozen such nuclei were prepared, it seems to me there would be no reason why the plan could not be made a success.

About that glass bottle—the experiment almost staggers me. If it can be made to work, there is no use in fussing with a big tent. If I mistake not, similar experiments were tried over and over again 25 or 30 years ago, but without success.

We had not seen an account of the experiment of Mr. Rawsome, and that is the reason I have not mentioned it in our columns. But nevertheless there is no use in being “doubting Thomases,” and I suggest that queen-breeders give the matter a test in the manner explained by Mr. Rawsome. A big glass carboy can be obtained at almost any drugstore.

My brother Huber will be home from school this summer, and we expect to turn him loose in the bee-yard, to do experimental work. I had planned to do a great deal of that kind of work, but lack of time always stands in the way.—Ed.]

MR. FRANCE LEGALLY ELECTED.

Why we Can't go Back of the Returns of the Last Election.

BY HERMAN F. MOORE.

I have just finished reading Mr. E. R. Root's masterly *resume* of the General Managership trouble. There is no doubt that the words, “*has been regularly and properly nominated, and is believed to be worthy of your support,*” should never have been printed on the ballot. I can not excuse Mr. Eugene Secor for their presence there. He, a practical politician, must have known their impropriety at the time. Perhaps he thought this was only a family matter, and the ordinary rules of ethics did not apply. I hope I am not unjust or uncharitable when I say that I believe the *true* reason for his action was a desire to get back at Abbott. The presence in the annual report of words indicating that Abbott had never turned over the money, goes to prove this view, when he must have known that Dr. Mason had the money before his death.

Mr. Abbott never was my personal preference for General Manager, nor was Mr. France; but I felt that, as Mr. Abbott had agreed to submit his status to the election in December, there should have been no attempt to prevent such a submission.

I believe the said words so printed on the ballot were the result of an effort on the part of some of our officers or members to do up Abbott at all events. If so, such action is on a par with the most disreputable party politics, and must be openly condemned.

However, I think the old National is in no danger of immediate dissolution, any more than the family is in danger when the boy comes home and announces to father and mother that “he is not going to school any more.” The young man gets a certain needed chastisement, and the great institution goes along very much as before.

Let me say, while I am speaking, that one great body (the greatest bee-keepers' society in the world) must be governed by strict parliamentary rules. All bodies of men, associated for a common interest, have from time immemorial submitted themselves to certain rules that make for harmony and the dispatch of business. There are Robert's Rules of Order, Reed's Rules, etc.

Some of the errors into which our officers have fallen would have been easily avoided by following closely the rules of order applicable to such cases. This great body of 1000 American citizens can be controlled in no other way.

I am satisfied that no new election is possible under our constitution, which says, “The election shall be held in December each year.” No new ballot can be cast until Dec., 1903, and none of us desires 12 months to elapse, and nothing done. The matter has gone to the voters in the regular way, and they have decided for Mr. France. This should end the dispute. I think even

Mr. Abbott would not desire to go to the voters again for another beating.

I think I am within the facts in saying that Mr. N. E. France, *the General Manager-elect*, has no enemies and will make a good officer, satisfactory to all. Let him serve his term, and let our Association move on to victory.

Chicago, Ill.

[As I said in our last issue, I can not believe that Mr. Secor intended to be unfair in his ballot. There was only one nomination that came through the official channel, and I do not think he thought that the sentence under Mr. France's name would be construed as an electioneering matter; for if he did, he would have left it out, as he would well know that a big protest would be raised. His record during the years he has served us has been too good to merit severe censure for his last official act, which, at most, was an error of judgment.

Regarding the implied statement that Mr. Abbott had not turned over the funds in his hands, I read the report at first just as you did, and as others have; but if you look the report over again you will see that Mr. Secor says in his third paragraph, immediately following, "The untimely death of the Secretary, Dr. Mason, probably accounts for his not remitting money in his hands for dues collected at Denver and at other times." Italics mine. The second paragraph was unfortunate; and, while we deplore it, we are hardly justified in believing that Mr. Secor meant to "get back" at Mr. Abbott.

Mr. Moore very sensibly urges that we stick to the constitution, and proceed along parliamentary lines, even if mistakes have been made. This is all we can do now. Mr. France certainly is not to blame for any of this muddle or trouble.—ED.]

GOVERNMENT AID FOR BEE-KEEPERS.

Experimenting with *Apis Dorsata* and other Species of Foreign Bees.

BY W. K. MORRISON.

Either my communication relative to government aid to bee-keepers was not clear or Dr. Miller must have misunderstood me when he remarked that the United States has men quite able to undertake research work for the benefit of bee-keepers. There can be no sort of doubt about that—at least there is none in my mind; but is the good doctor sure the able men he has in his mind's eye would be the men selected? This is the point I am rather dubious about. There is also another point on which there rests some doubt in my mind. It is this: Would these able men not be liable to service in all sorts of wildcat enterprises by the orders of some person or persons who would be lord over them? Things like this have been done. There is any amount of work to be done in behalf of the art and science of bee-keeping, and I think

apiculture does not begin to get the attention from the United States government which it really deserves, and some industries of far less importance get valuable recognition from Congress.

But before bee-keepers apply for more recognition let them make up their minds what they really want before presenting an appeal for aid. It would be a very grave mistake to apply without a well-defined program ready, one that would clearly appeal to the practical man. Congressmen are very practical men.

The only serious problem that bee-keepers have discussed with a view to asking government aid is the importation of *Apis dorsata*. I believe *dorsata* would be a valuable acquisition; but as it has never been domesticated, and we are practically without information as to its habits, it seems rather doubtful whether we should ask for government aid for such a scheme. It seems to me it would require the attention of experimenters for several years before any thing tangible would result. *Apis dorsata* and its allies should be carefully studied on their own native heath before attempting their introduction into North America. If they were already under domestication it would be different; but we here have to deal with a purely wild animal about whose habits we are mostly ignorant. I believe, however, with Prof. Benton, that it can be tamed and harnessed to the use of man. The reports of the government of India on the bees of that country I take no stock in, as such investigations are usually left to public officials whose knowledge of bee-keeping is rather small, in some cases probably non-existent.

But why not broaden the subject? Why stick to one bee? *Apis Indica* we know can be domesticated, and is not likely to be a nuisance to civilization. There are very many others. Africa has bees in abundance over its whole length and breadth. Are none of these valuable? We do know that bee-keeping is the sole occupation of large tribes of people in that continent. South Africa is a land of flowers, mostly melliferous. Can't we glean something from a study of them? The East Indies, Siam, South China, South America, Asiatic Turkey, and other countries all have their little honey-gatherers. It is very likely indeed that some of them are of great merit, and worthy of early introduction. This is hardly a field for enterprise, and is just where a kindly government might step in to assist, particularly so since the quest for bees may be united with a quest for plants that yield nectar bountifully. To do this would require a staff of keen observers, past masters in bee-keeping, for it would take one man a lifetime to cover the ground I have mentioned, even superficially, which would hardly do in this particular instance.

There is another problem which is equally fascinating, but not so romantic; it is, getting honey-plants which it would pay

bee-keepers to raise, something like buckwheat or alfalfa. I have an idea there are lots of them. There is also a work to be done in the way of experimenting with reputed honey-plants (such as catnip) on a grand scale—something that can not be done by private means.

There is also a chance to do something for bee-keeping in connection with forestry. Some of the great reservations would make excellent bee-keeping preserves. Then in planting trees for either timber or shade, due regard should be had to the interests of bee-keepers. This is a rather difficult and knotty problem, and to be undertaken only by a wealthy government. It would be well if a beginning were made along these lines, for some of them would take many years to solve; and seeing other industries get valuable help from the government, bee-keepers need not be slow about the asking. The cost of a single warship would pay \$100,000 a year for 30 years. The same sum of money might double the bee output of the United States.

[Your two last sentences suggest why the funds are not forthcoming more readily for experimental work. It has always seemed to me there is too much fuss and flurry about the big armaments. Millions of dollars are wasted in useless navy equipment. Take, for example, the big 16-inch gun erected off Sandy Hook. Even the best government experts condemn it, now that it is just completed, and thus a cool \$100,000 is wasted. There are numerous other examples of this kind, and yet there is any amount of needed experimental work that would be useful to the peaceful citizens of the United States, if it were not for such foolishness. As Mr. Morrison very properly says, the cost of one warship alone would give us \$100,000 for 30 years. Warships are all right in their place; but too many of them make a drag on civilization and progress. I hope our nation will not adopt the policy of Great Britain in this respect. The most of her navy equipment to-day is out of date, and it would be practically useless when pitted against modern armament. If we keep on building warships year after year we shall have a lot of out-of-date smashing machines. It does not seem as if we can ever have any very great war again, notwithstanding the jingoes who rant over Venezuela.—ED.]

PEAR-BLIGHT.

Are Bees Chief Agents in Spreading it?

BY J. E. JOHNSON.

Lately scientific investigation seems to prove this; but experience proves just the opposite. After considerable experience and observation, and after careful study and thought, I have found the following to be facts:

1. Any bad-blighting variety planted in

soil very rich in nitrogen, or made rich with barnyard manure, and given plenty of moisture, will, in most instances, blight before it ever reaches the blossoming period. I have both bees and trees, and I have never yet seen a bee alight on a pear-tree, large or small, when not in blossom. My first experience was to set little year-old trees, Bartlett and Kieffer. These were healthy trees, and free from blight; but I made the same mistake that nearly all first make; and that is to plant in the garden in the richest soil I had. This was in Kansas. However, there were no other pear-trees on the place, neither did my near neighbors have any pear-trees. The season was wet; and before the summer was over, all were dead with blight—first the Bartletts then the Kieffers.

2. I have seen large pear-orchards, during a wet season, badly blighted. When the weather turned off dry the blight would stop without any cutting-out at all; and if it continued dry, trees would sometimes do well, the blight having been checked completely.

Some years, if the spring was dry, the trees would be covered with blossoms, and bees would be busy from morning till night every day on bloom. A Bartlett and Kieffer, right side by side, bees working on both busily, the Bartlett would blight, and the Kieffer be perfectly free. According to the theory that bees are the chief agents in spreading blight, the Kieffer would be thoroughly inoculated with the bacteria; but if Kieffer is planted in rich soil it will blight. Major Holsinger, an extensive fruit-grower in Kansas, and an able writer in the *Western Fruit Grower*, has about 4000 Kieffer pear-trees, some planted 18 years. They are practically free from blight, although Bartletts and Leontes have blighted to death in his orchard. Now, why did not the Kieffers blight? Because, not being over-stimulated with nitro-geneous fertilizers, they have been so far practically immune to blight. In the East we hear no complaint about bees spreading blight. Why? Because land is not so new or rich; but in California, a State which is remarkable both in climate and soil, which causes all trees to make rapid growth, these trees have been planted by the thousand, largely Bartletts. With the climate and soil favorable to blight, and then bad-blighting varieties planted, could any one wonder at their having an abundance of blight? California is remarkable for fine fruit, but the wrong place for pear-growing; however, if they plant varieties not so apt to blight they may succeed; but not without bees to pollinize the blossoms.

The *National Fruit Grower*, of St. Joseph, Mich., for Jan., 1902, says that the blight bacteria was first announced in 1880 by Prof. Burrill, who said trees may be inoculated by the aid of insects; but as the germs float in the air the mischief may be done by the wind. Prof. Waite says the germs can live only in a liquid or semi-liquid. I be-

lieve both are right to a certain extent. Thus, the germs can live in the air if moist, although air is not a liquid; but in a dry time they can not, hence we find moist weather so favorable to the spreading of blight. Prof. Arthur says, as the disease progresses the germs exude on the surface, and the gummy substance thus produced is washed off, the gum is dissolved and the germs set free, and washed into the ground. The germs multiply there in rich mold, and grow all winter or year after year. In a dry time the wind takes up the germs in the air, or they may be taken up by simple evaporation. I will add this: That not in a dry time but in a wet time they will be taken up by evaporation or otherwise, and float in the air from tree to tree, and inoculate only such trees as have an over-supply of sap or unnatural growth; hence I say the pear, being a very rapid grower on only moderately fertile soils, if stimulated by barnyard manure or any fertilizer containing an abundance of nitrogen, it will cause the tree to produce an unnatural growth, and render it subject to inoculation by said bacteria or germs. I also claim that by so stimulating pear-trees, especially of bad-blighting varieties, these same germs will originate without any inoculation whatever. This I have proven to my own satisfaction and by my own experience; and I have my own orchard free from blight, though blight was all around me, to prove my theory correct so far. However, I say Prof. Waite is a very good and able man and a friend to the bee, and I feel sure he will finally solve this question; and when it is solved, I feel sure the bees will be exonerated from all blame. It has been charged with many crimes, but has always got a final verdict rendered in its favor.

After having read carefully all I can find on blight bacteria, I have yet to see a single case where a bee has been examined and found to carry bacteria. So, let us not pass judgment on the bee until all the evidence is in, both pro and con. So far all evidence against it is purely circumstantial and light in weight as experience shows; for in a season of fine dry weather, when the bees are permitted to work on blossoms all through bloom, and if weather continues dry, blight seldom spreads at all; but in wet seasons like last year, when the bees are prevented from visiting the blossoms, much blight may be expected.

Williamsfield, Ill.

[You suggest that, by stimulating pear-trees of bad-blighting varieties, pear-blight can be induced in a tree without any pear-blight germs. If the blight is due to a microbe—and all scientists, I believe, agree to that—then the disease could never be induced without its presence. There may be something, however, in your statement; and that is, that the germs, being ever present, will be more apt to develop in their latent state when the pear-trees are stimulated in an over-productive soil; that is to say, fa-

vorable conditions will make the disease possible.

You say you have read carefully all you can find about blight bacteria; but "I have yet to see a single case where a bee has been examined and found to carry bacteria." It was that same Prof. Waite, I believe, who found the germs of bear-blight on the tongues of bees; and while Prof. Waite is a warm friend of the bee, he thinks he has established one of the sources of the disease, or, rather, of its spread. But Prof. Waite might be mistaken, although I think that, in all fairness, we should assume he was probably right, because he is a scientist that stands high.

I think I can agree with you, however, that bear-blight is not propagated by means of the bees nearly to the extent that has been claimed; and the awful spread of the disease in Central California was not as much due to the bees, if at all, as it was to other agents, as, for example, ants crawling all through the diseased juices, scattering the virus over the healthy twigs of the trees. The very fact that young trees that have never been in bloom, and which the bees have never visited or been near, are just as badly blighted as the old trees, goes to show that the sources of the disease are due to some agency outside of the bees. As ants are very numerous in warm countries, it is reasonable to assume they play a very important part in the spread of pear-blight in California.—ED.]

ORANGE-BLOSSOM HONEY.

In Some Localities it can be Depended upon for a Honey Crop.

BY JAMES H. THOMPSON.

I see in GLEANINGS you are bottling honey. It has always seemed to me that the honey from orange-blossom would answer well for this purpose, and also make a nice blend.

I have had bees since 1894, and, except one year, have always had orange-blossom honey. I should have had some that year, but my bees were not in condition to gather it. In fact, if it had not been for orange-blossoms I should have lost bees in many of these dry years; so I am convinced it is as sure as any other honey in any place.

I once saw an item written by Frank Benton, saying that orange made very nice honey, but that it would never do to depend on it. Well, perhaps so where he was; but here it is on irrigated land, and the weather is all there is against it, though it is better, of course, sometimes than at others.

Orange-blossom honey granulates; but in my retail trade I find more people who like the granulated better. I have customers who buy it and keep it until it does. Eastern people come here from white-clover regions, and tell me they never ate better honey.

North Ontario, Cal.

IN MEMORIAM OF THE RAMBLER.

His Last Hours and his Life History.

BY E. R. ROOT.

John H. Martin was born in Hartford, N. Y., Dec. 30, 1839, and died at the Hospital Reina Mercedes, Havana, Cuba, Jan. 13, 1903. About a month ago he was seen by our friend Mr. Danzenbaker, at his cabin in Taco-Taco. At that time he appeared to be reasonably well, and seemed like the John H. Martin of old, bubbling over with his effervescing jollity and kindly good nature. But little did he think then that the end was so near. Soon after, the Rambler told Mr. Moe, one of his neighbors, that he was not well, and that he would have to go to Havana, to some hospital where he could get the best care. Mr. Danzenbaker, Mr. de Beche, and others, called on him every day thereafter, only to find that he was a very sick man. He began to rally, and seemed better until pneumonia took hold of him, with the results above stated. Mr. Danzenbaker, who visited him during his last hours, writes concerning him:

Mr. de Beche and I went together to see him. He seemed so much better, and so hopeful, that we both thought he would soon be able to sit up. He again told us that it seemed too much for us to come every day; but we assured him we felt it a pleasant duty to come and see him gaining so nicely.

Monday, Jan. 12, Mr. Hilbert (Mr. A. I. Root's Michigan neighbor) went with me to see friend Martin, that he might have a clear knowledge of his condition to report to Bro. Root, as he was going to him next day. We found him suffering severely from pneumonia, his breathing being fast and painful. He was glad to see us. As I took his hand for the last time he seemed to realize fully the gravity of his condition. The nurse requested us to be brief, as he was very weak. As I bade him good by I told him I would come again the next day, and he replied, "All right." That was the last word that he uttered to an American except his faithful nurse. It was then 8 P. M. Two hours later he was delirious and unconscious till 7:30 P. M., Jan. 13th, when the kindly genial spirit of our dear friend passed on to a higher life, free from sickness and sorrow for ever. He was very much stronger than many of us. Who will be the next?

Havana, Jan. 14. F. DANZENBAKER.

Thus our friend has gone to meet that dear companion his wife, from whom he has been separated these many years. Notwithstanding the light vein of humor that pervaded his writings there was in his heart a cloud of sorrow that seems never to have left him entirely—sorrow for the long-lost loved one of his younger days. Mr. Martin was an earnest Christian, and we have every reason to think he has gone to meet that dear one, where fever, where sorrows, where pains, where heart-longings never come, and where life blossoms out into full fruition.

Mr. Martin began writing his Rambles in June, 1888. He sent us a batch of three or four articles, giving an account of visits among some of the prominent bee-keepers of Northeastern New York. There were some rude pencil-sketches representing himself and his hosts, and in the note accompanying he said he doubted whether we could use the stuff or not. After reading the

manuscript through I remember writing him that he needed to make no apologies—the articles were good, and had been passed in to our printers. The rough sketches, a prominent feature of the Rambler articles from the very first, were turned over to R. V. Murray, of Cleveland, to work over for publication. Little did I know then that he would keep on writing for us, traveling clear across the United States, and finally land in Cuba. But such was the beginning of his series of Rambles.



JOHN H. MARTIN.

Mr. Martin gradually widened the circle of his visits (around Hartford, N. Y., his old home), taking in some surrounding States. As time went on he finally wrote us that he had an itching to go to California, and asked if we had any choice as to which portion of the country he should travel through before stopping at the Pacific coast. Our preferences were given, and the trip west was begun.

Our older readers will remember how interesting these articles were. He cartooned all the fads and foibles of bee-keepers as he visited them. He was always depicted with a camera, an umbrella, stovepipe hat, striped pants, and long frock coat. Like "innocents abroad" he was constantly blundering into new fields at unexpected times, and how his visits were received he graphically portrayed in these columns. I should like, if space permitted, to give a few samples from his humorous writings,

but space forbids; but a few illustrations that were worked over by our artist, Mr. Murray, will give some idea of the character of the Rambler and his writings as he went abroad over the land with his pencil and kodak. Sometimes, as will be seen, fortune smiled on him, and sometimes he "struck it rich;" but sometimes the cruel hand of fate rested heavy on him.

When he arrived in California he went through the length and breadth of the land, and everywhere he went he made friends. His caricatures never offended, but, on the contrary, they set forth some real conditions as they actually existed, showing bee-keeping as it was in the great West. In my late trip through California I everywhere heard kindly words spoken of his writings; and I learned how true and faithful all his descriptions and portrayals were.

Perhaps it may seem a little inappropriate to put in an obituary comic caricatures of the man who has just left the activities of this world; but the natural humor of his make-up were so intimately interwoven with his real life that they can scarcely be separated from his history. There were hundreds and hundreds of cartoons made, but we reproduce only a few of them as specimen samples of his work after it came through the hands of Mr. Murray. The Rambler would outline the sketches, and Murray put them into form.

Mr. Martin, although he was known to the bee-keeping readers as a Rambler, would between times settle down in a little cabin all alone by himself in the mountain or on the plain, where he could manage from 300 to 400 colonies. He seemed to love solitude and nature. He loved the bees; and when not actually rambling he would be getting in crops of honey. Sometimes he was successful, and sometimes not. Our artist has shown him when the fates favored him and when they were against him.

While in California he wrote that illustrated serial further depicting California life entitled

Bee-keeper Fred Anderson; or, the Mystery of Crystal Mountain. It was a story of no mean order, and elicited the praise of hundreds of our readers.

In the summer of 1901 Rambler wrote he had another "itching," and that was to go to Cuba, and asked what I thought of a trip to gather up materials for Rambles. I wrote back we should be very glad to send him; but we feared the climate might not be as agreeable to him there as in California; that, while the absolute temperature might not be greatly different, the humidity, mosquitoes, etc., might make living very uncomfortable if not dangerous. I



THE RAMBLER IN CARICATURE.

urged him to go, but suggested that he stay only during the winter, and go back late in the spring or early summer. At that time he was at Reedley, Cal., where he was taking care of the bees of J. C. McCubbin. His apiary in Southern California had not done well, and he had, therefore, gone northward where the seasons were less uncertain.

He went to Cuba in November, 1901. It was not long before he became interested

aware that the surrounding conditions were so unhealthy, and probably he was not. But the dreaded malarial mosquito in the



DIVINING FOR SILVER.

in the possibilities of Cuban bee-keeping, and decided to start an apiary. He purchased 100 nuclei, as I have already related, increased them to 300, and procured a large crop of honey besides. I was not



NO RAMBLER ALLOWED IN HERE.

locality apparently got in its deadly work, and the end came all too soon.

The last correspondence I had with Mr. Martin was to the effect that the pressure of work would not permit him to go out and get more material for rambles, but that he would prepare a series of articles telling something of his experiences in increasing 100 nuclei to 300 colonies, and how he managed last summer to secure that big crop of honey. And this reminds me that Mr. Martin



was a genius, handy with tools, and an adept at contriving. When I looked through his den in California I was surprised at the number of little devices he had made.

None of his inventions ever came much into prominence, for the reason that he was not a man to push any ideas of his own. But I recall a glossometer that he made, for he had been working on that problem when a comparatively young man—the problem of measuring bees' tongues—for he early saw that some bees could reach further than others; and the result was, he made perhaps the most perfect measuring-instrument that was ever devised. It was



NO HONEY; RAMBLER IN HARD LUCK.

described and illustrated in our issue for May, 1882. Another invention of his was a honey-strainer which had more than ordinary merit; but owing to the difficulty of making it in a wholesale way, at a price that would be in the reach of all bee-keepers, we did not put it before the public. A little later, as our friends will remember, we illustrated and described his Rambler jouncer—something which I consider useful and really good. It is a machine for jarring bees out of supers when bee-escapes are not used. We made a few of them, and tested one of them ourselves, and found that

the jouncer was all that Mr. Martin had claimed for it.



RAMBLER'S EXULTATION; FORTUNE FAVORS HIM.

Mr. Martin had told us in some of his last letters that there were some inventions which he wished to show to the public, and these were to be illustrated and described



THE RAMBLER'S SCINTILLATIONS; HOW HE GRINDS OUT HIS THOUGHTS.

in a series of articles which he expected to write when he had a little more time. But death caught him, and we shall never know what these later ideas were.

Perhaps no single writer who ever wrote for GLEANINGS ever called forth more praise

from our subscribers than the Rambler. His serio-comic writings, filled as they were with valuable hints, and the exact portrayal of every locality through which he traveled, made him not merely a funny man, but a dignified correspondent who could and did give us much of value through his writings. While GLEANINGS mourns his loss it mourns it no more than every subscriber who has followed him through these years; and when the news was flashed back from Cuba that the Rambler was dead, I felt as if a near and dear friend had passed away; and I never met any one who had come in contact with the Rambler who did not hold him in exactly the same high esteem. When I gave the news to our artist Murray when in Cleveland last, it seemed like a severe shock to him; for Murray and the Rambler have been in close touch with each other for about 25 years. When they met for the first time in Cleve-



STRUCK IT RICH AGAIN; "DO YOU THINK THEY KNEW ME? NAW!"

land, in 1891, they were like old friends, kindred spirits that will be forever kindred as long as time lasts.

The funeral of the late John H. Martin was held from the Baptist church at Hartford, N. Y., his old home place, Sunday, Jan. 25, at 11 A.M. The other churches of the town united in the services to pay respects to his memory. Rev. J. A. Parker, of the Congregational church, of which Mr. Martin was deacon, preached the funeral sermon, assisted by Rev. H. W. Hakes and Rev. H. E. Hoyt. The four deacons and four other friends of the Congregational church acted as bearers.

Mr. Parker chose for his text James 4:14: "For what is your life?" The words were suggested to him from a letter which Mr. Martin wrote to the C. E. society on their 15th anniversary, which was held Aug. 17, 1902. Mr. Martin was at one time President of the Society, and also Superintendent of the Sunday-school for a good many years. His friends laid him in his last resting-place by the side of his wife in Morning-side Cemetery.

F. A. LOCKHART.



ECHOES FROM IDAHO; PLENTY OF BEES THERE; ALFALFA.

I arrived here last March to test this country in the line of bee business; and from what I could glean during the past season I pronounce it a good place, although the bees' working season is short but sweet.

As I have for some time been sitting in the background "gobbling" up the good things GLEANINGS has to say, I got so full that I can't well hide any longer; so when you got around to the Idaho travel I found myself in many respects on the same level of opinion. There are only a few items I wish were mentioned differently. One is as to the scarcity of bees, at least for twenty miles west of Boise. I have traveled the breadth of the valley, north and southeast and west, time and again, and I know of no portion of country better supplied with bees than this. I have found for miles along the road every farmer (and many having only twenty to forty acres) has bees, and in the working season the air seemed alive with them, working, swarming, and absconding in every direction, taking advantage of almost any cavity accessible, from the garret to the floor of the houses; and I know of one instance where they took possession of a muskrat hole in a dry ditch bank.

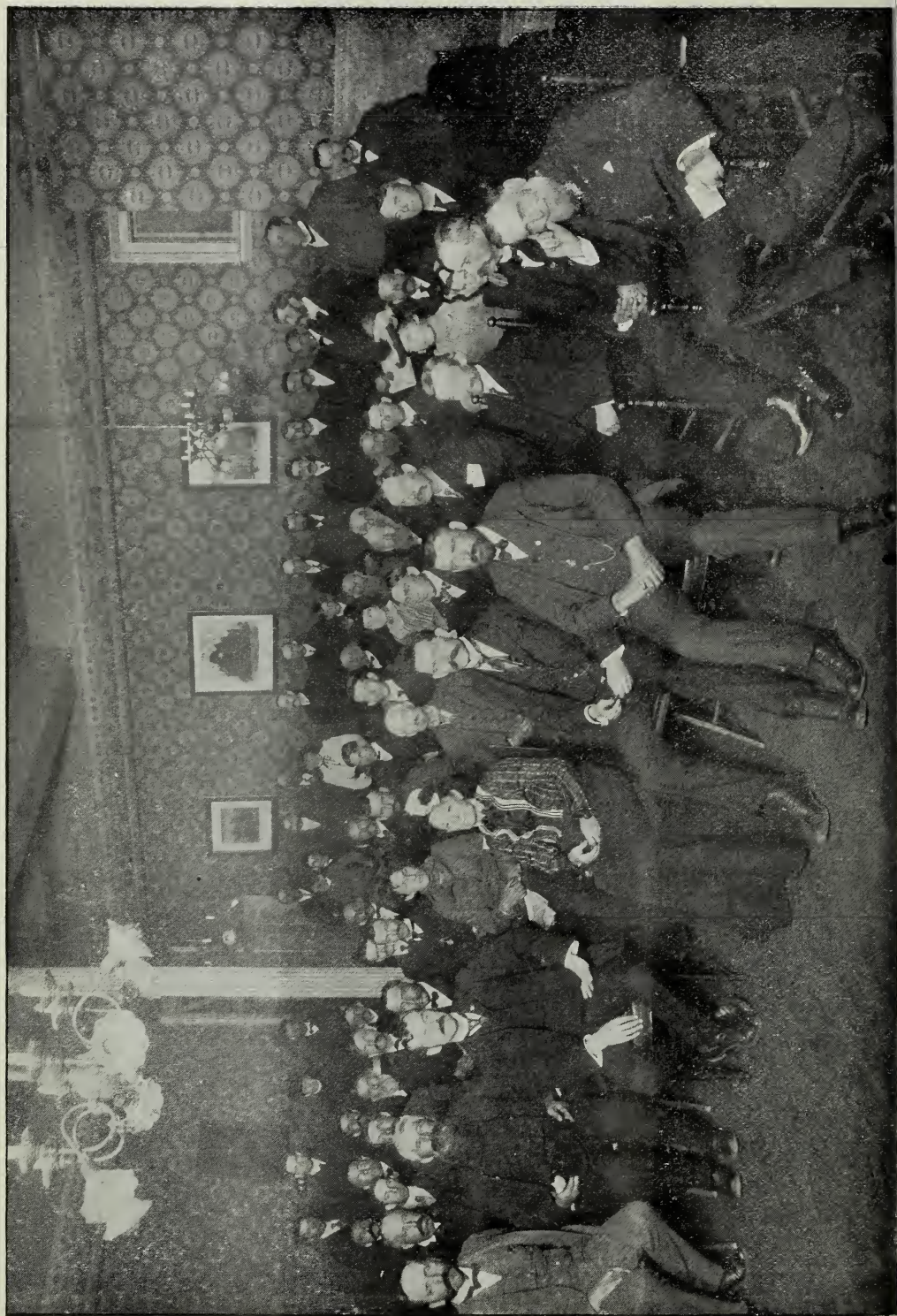
The other item—no danger of the alfalfa all being cut before it blooms. This country is improving fast; new fields are sown to alfalfa, and if a few stands of bees are put there the bees will keep pace with the improvement of the country.

Nampa, Idaho.

G. J. YODER.

WHITE CLOVER—DOES IT YIELD HONEY THE FIRST YEAR, ETC.?

Having seen the statement that white clover would not yield honey the first season, I kept a sharp lookout last season to find out the truth. The season of 1901 was very dry all through the summer and fall—so much so that I believe I could have carried in a bushel basket, at one load, all the white clover that lived over—that is, all I saw. Last spring was very damp and rainy, which caused an unusual crop of clover to spring up. This was followed by about a month without rain, which greatly checked growth. Still, there was much of this young clover, in favored places, that bloomed and furnished a protracted flow during the summer when not too rainy. This was our only source of honey worth any thing this year. Asters, which gave



such a bountiful crop in 1901, did not yield a bit this time; and those in this locality who do not feed their bees will lose most of them. There are no very extensive beekeepers in this immediate locality; but I believe half the bees I know of are already dead.

D. B. THOMAS.

Odin, Wright Co., Mo., Dec. 12.

[Friend T., I have been well aware that not only white clover, but nearly if not quite all the clovers, blossom and yield honey the first year if every thing is favorable. Even alsike has at times made a beautiful show of heads, the very year it is sown. In connection with this I should like to mention that we sowed some lawn grass with a pretty good sprinkling of white clover around our cabin in the woods in August, 1901. It came up strong, thrifty, and wintered without the loss of a single plant so far as I could see. Nothing ever heaves out by the frost in that locality. During the past summer this lawn gave the largest yield of white-clover blossoms I ever saw. The ground was almost as white as snow with the clover blossoms; and, by some hook or crook that I can not explain, there is quite a dotting of alsike. As fast as the blossoms dried up, other blossoms took their place. Our two colonies of bees were just roaring over it all the while. While I am about it I may mention that, after all our white honey was gone, the best one of my two colonies stored 25 well-filled sections of buckwheat, besides quite a number of sections that were not quite filled. I mention this because it is something new to me to get 15 lbs. of nicely sealed comb honey from one colony working on buckwheat.—A. I. R.]

OLD AND NEW COMB; DO NOT QUEENS SOMETIMES PREFER THE OLD AND SOMETIMES THE NEW?

For several issues I have been noticing your discussions with Dr. Miller as to whether new or old comb is preferred by the queen. There are times when a queen will prefer drawn or partly drawn combs of foundation to old black combs, and there are other times when the reverse is true. This matter is regulated entirely by the condition of the honey-flow. When there is a fairly good flow of honey, the colony storing above a living, secreting wax, and pulling foundation, it is then a queen is doing her best, and seems to prefer freshly drawn combs, and at such times (with the more prolific races) I have seen the queen occupy the entire sheet of new comb from wood to wood, even depositing eggs in the short cells against the molded bead on the under side of the top-bar. While the queen now seemingly prefers foundation freshly drawn, old combs will not be deserted, but the brood will have a scattered appearance, and pollen will all be stored in the old combs exclusively, sometimes one or more of the old combs being solid pollen; but let the honey-flow slacken or cease, and the queen

will at once return to the old combs, and nothing but a flow of honey, or feeding until waxsecretion begins, will induce the queen to use again newly drawn combs or partly drawn foundation. This I have proven over and often in the past few years. When partly and full drawn combs have been brought over from the previous seasons, these combs have been put in the brood-nest in spring in place of frames of brood removed; and unless a honey-flow was on, these combs would remain untouched by the queen, even passing over and laying in the black combs beyond.

Then, again, it is the custom in the South, where much honey is put on the market in the shape of "bulk comb," to carry over as many drawn combs of foundation as possible. I have seen these supers of new combs stacked on the hives fully covered with bees, but not an egg would be laid in them until the honey-flow began; then it is that the queen will occupy these new combs at once. Why the queen will prefer and use new comb during a honey-flow and will not use any thing but old combs at other times, I can not explain. In the case of Mr. Hutchinson (Stray Straw, p. 971), searching an old black comb in a nucleus for first-laid eggs, I would account for it in this way: It is seldom that a nucleus run for queens becomes prosperous enough to store much honey or build new comb; and there being a vacancy prepared in the old comb, right among the brood, from eggs of the previous queen, it is natural that the queen would occupy this first. If the nucleus is strong with a good field force of honey coming in, I should expect eggs in newly made comb as quickly as in the old black combs.

Beeville, Texas.

W. H. LAWS.

[Dr. C. C. Miller's attention is respectfully called to this. It is no little source of gratification to know that a practical queen-breeder—one of many years' experience—has given me no little aid and comfort. Mr. L., I think, explains just the conditions when queens will favor new comb and when not; and it appears to me that his explanation quite dissolves the bitter wrangle between Dr. Miller and myself. Come, doctor, let's shake.—Ed.]

SEALED COVERS ENDORSED.

I notice on page 907 Mr. Gill condemns the sealed covers in rather strong terms. I have had splendid success in wintering bees under sealed covers, both in Northern Iowa, where the thermometer registers 30 below zero, and in Ohio, where it seldom went as low as 20, and did not stay at zero long at a time, and the sealed cover has been a success with me in both places. Give me a good strong cluster of bees with plenty of good stores of honey, and I would not give any one ten cents to warrant them to winter perfectly under sealed covers if properly packed. There should be a good warm quilt and several inches of good

dry packing, with a good roof over all; of course, the sides should be packed as well as the top. Absorbents are not at all necessary to the successful outdoor wintering of bees. Chaff or other packing is not valuable as an absorbent of moisture merely, but rather as a retainer of the heat generated by the cluster, giving it back to the bees during cold spells, thereby enabling them to maintain a tolerably even temperature, the same as is secured in a hot-water incubator by using several inches of sawdust. I winter most of my bees out of doors, and the chaff is always dry, whether I use sealed covers or quilts. When quilts are used I use several thicknesses, so it amounts to about the same as sealed covers.

J. E. HAND.

Wakeman, Ohio, Nov. 26, 1902.

[Our own experiments, covering a period of six or eight years, now confirm us in the belief that sealed covers in this locality, for wintering, properly protected with packing material, give better results than absorbing cushions placed directly over the cluster of bees. Absorbents become damp or moist from the breath of the bees before spring, while the packing over the sealed cover remains perfectly dry. Under it the moisture as it collects will form in drops and run out of the entrance, while that contained in a cushion is a constant menace to the health of the bees.—ED.]

NO BLACK BROOD AMONG HERSHISER'S BEES.

Mr. E. R. Root:—During the past year it was intimated in GLEANINGS that Orel L. Hershiser had black brood in one or more of his apiaries. Accordingly Mortimer Stevens, State Bee Inspector of the fourth division, selected a time most favorable for the discovery of any disease, and called on me to accompany him, that there might be no question of the existence or non-existence of disease in his apiaries; and while I feel that a report should have been sent to your publication earlier, it is but just to Mr. Hershiser to say that, after a most thorough inspection of all his apiaries, we were unable to find any black or foul brood, or any evidence that they had ever been infected.

By direction of the Department of Agriculture, the four State bee inspectors are now conducting a crusade against the adulteration of honey, with good results.

As soon as the statistics can be compiled the Department will send the bee journals the results of the season's work for the suppression of bee diseases.

CHARLES STEWART,

State Bee Inspector 3d Div.

Sammons ville, N. Y., Nov. 22.

[Mr. Hershiser is a very careful bee-keeper; and I should not suppose that black brood would get much of a start in his yard without his knowing it. We are glad to know that the State Bee Inspector finds no trace of it.—ED.]

A CASE OF BEE DYSENTERY WHICH WAS NOT CAUSED BY CONFINEMENT.

Have you ever known bees to be sick because of something they were feeding on? Last spring while on many varieties of wild clover, fruit-bloom, etc., my bees were affected just as the A B C book describes them to become from confinement in winter. I could not observe that they were swollen or distended; but they dropped over my hands and about the hive. Sometimes they exuded a yellowish substance exactly like yellow paint, and sometimes it would be a dark brown. No confinement in my case, as they had been working finely; had swarmed—in fact, it has cast four swarms. I find no mention of it in any of my bee books, hence I ask you about it.

Arbuckle, Cal.

HENRY B. JONES.

[This case is a little peculiar; for when bees can fly it is a rule that any tendency to dysentery will disappear. I should be inclined to think it a case of bee-paralysis, for all the symptoms you have named could be applied to that disease, except that I never saw paralytic bees void a dark-brown excrement. The color is usually a *transparent* yellow. It is possible there is something in the fields that bees gather that causes a violent dysentery, even when the weather is warm. Perhaps some of our veterans can give us some parallel cases. If so, let us hear from them.—ED.]

FOUL-BROOD LAW IN IDAHO; UNOCCUPIED BEE-RANGES IN THE STATE.

I enclose a program of our annual meeting, held Dec. 19 and 20. The meeting was very well attended. A foul-brood bill was drawn up, pure-food measures indorsed, and a resolution passed to discourage outsiders, intending to engage in bees *exclusively*, from locating within three miles of any association member without that member's written consent. Some of our members have from 400 to 1000 colonies, and they object to the assertion, published in GLEANINGS, that there is abundant unoccupied pasturage here in Western Idaho, in the Boise, Payette, and Weiser Valleys.

One Utah apiarist declares that if we pass a foul-brood bill he will, in his next trip through Idaho, scatter foul-brood honey from one side of the State to the other. He also offered three of our members foul-brood honey to enable them to destroy the apiaries of the would-be bee-keeper. All our best locations are surrounded by more or less worthless sage-brush land. In addition to this, it is *no myth* that alfalfa is cut too soon, with us. Red clover and timothy are much grown here, and do not yield surplus honey. Our crops are usually small, but we are sure of some honey every year. We realize that you intended no misrepresentation in regard to this portion of Idaho, and believe you will be willing to show some of the disadvantages also. If any apiarist desires to come here, let him come pre-

pared to buy land of his own, and to raise alfalfa seed. Land here is very valuable—\$35 to \$200 per acre.

E. F. ATWATER, *Gen'l Mgr.*

Boise, Idaho, Dec. 22, 1902.

[I am glad you are going to make an effort to have a foul-brood law, and GLEANINGS will give you any assistance possible.

Say, if you will give us the name of that Utah apiarist who threatens to scatter foul brood in Idaho, and can give satisfactory proof from several witnesses that he made such a threat, we will publish him to the world. Get his picture if you can. Such a fiend and rascal as that ought to be branded all over the bee world. My own opinion is, he could be held accountable for such a threat, and GLEANINGS will put \$25 up to begin the cost of prosecution. I am not sure but this case should be brought before the National Bee-keepers' Association. Such a man should be driven out of the State, or sent to jail, where he belongs.

When the writer went through a portion of your State, he drove over a great deal of alfalfa country where there seemed to be no bees; and I was told there was much more of it in other portions of the State also available for bees. Since then I have been informed that there has been a great rush of bee-keepers to the locality mentioned, and the probabilities are there is no field vacant.

I do not believe bee-keepers in any locality object to having more bee-keepers come to their vicinity, providing that such newcomers do not encroach on bee-range already taken up. But there are some who rush into new country, and squat their bee-yards within a mile or so of another yard, that has the reputation of getting much honey. Let bee-keepers take note of the fact that Idaho, *so far as it is settled*, is already dotted over with bee-yards.

But in Idaho, as in nearly every other State, there is a great deal of sage country now desert that will be opened up just as soon as the State and nation put in irrigation-ditches so that this land, fertile as it is, can be made available for growing alfalfa and other crops. If one really desires to get a new location, let him ascertain what fields are to be reclaimed by irrigation. There is no law against being the first one in the field.—Ed.]

WHAT MADE THE BEES DIE SO?

I had four colonies of bees, and they have all died since the first of November. The two first were late swarms, and had but very little honey; the other two had plenty of honey. The trouble began early in the fall. Every time that I examined them there would be quite a number of dead bees on the bottom-board, and some litter like bits of comb. When I opened the hives there was about a quart of bees in the cluster which looked very much like live bees except that their abdomens were slightly swollen, and looked whiter than usual.

There was no young brood, and no moth-worms. I failed to find a queen in either hive. I should like to have your opinion in regard to what was the matter; and if you know what caused the trouble, what would be the remedy? If I get more bees, would they be liable to take the same disease?

Beaver, Mo.

JACOB WIMMER.

[I assume in the first place you are wintering your bees outdoors. There is a possibility that the bees gathered something in the fall that induced early dysentery, although you do not speak of the fact that any of the hives are stained, although I infer that the bees are diseased because you say the bodies are swollen; and that leads me to suggest that possibly they have paralysis or bee palsy—sometimes called the trembling disease. The litter of little bits of comb in the bottom of the hive suggests that mice or some other rodents are gnawing at the combs. Without knowing more of the conditions it is pretty hard to say what the trouble was. It is possible that the hives being in an exposed position, and the entrances large, the bees became chilled, and they are dying from cold.—Ed.]

THE BEST METHODS OF QUEEN-REARING, ETC.

1. Is the "Doolittle method" of rearing queens in upper stories above a queen-excluder, and getting them fertilized from the same a success—that is, when there is another queen below?

2. What book has the best method or methods of rearing queens in it?

3. How is the Danzenbaker hive for queen-rearing?

J. F. DIAMOND.

Fly Mountain, N. Y., Oct. 10.

[1. No, only at certain seasons and under some conditions. The appendix to Mr. Doolittle's book fully covers this point.

2. This is a hard question to answer. Some prefer the Doolittle method, and some prefer the Alley plan. Both have their good points. But a modification of the Doolittle method as recommended by W. H. Pridgen or by Swarthmore (E. L. Pratt) I would consider an improvement. Mr. Doolittle brought out, or, rather, brought to prominence, the artificial-cell-cup plan. The two other gentlemen have, in my judgment, made improvements to such an extent that one can rear more queens with less labor. Therefore if you wish to get the best "book" on queen-rearing you will have to consult the current literature in bee-journals.

3. Very well adapted for it. In the rearing of queens it is an advantage to have frames a little smaller than the Langstroth; and to the extent that the Danzenbaker frame is smaller or shallower than the Langstroth, to that extent it is better for queen-rearing. But this is not all. The general construction of the Danzenbaker is such as to make a warmer brood-nest—a very important consideration when the clusters of bees are necessarily small.—Ed.]



“OUR OWN APIARY.”

How funny it sounds to take that old familiar heading, under which I wrote for so many years! Well, “our own apiary” here in Cuba is certainly the handsomest apiary I ever saw. In fact, it is beyond any of my wildest flights of imagination, away back when I signed myself “Novice.” Now, mind you, I do not say it is the best *arranged* apiary, for it certainly is not, especially for queen-rearing; but it may do very well for honey. It is a veritable “White City” of miniature “business” houses. Mr. de Beche planned it, and Mr. Wardell (under some protest) carried it out. The hives occupy a plot of 5×10 rods. There are 10 rows of hives with 50 hives in each row. This brings the hives between three and four feet apart from center to center. Each outside row faces outward, then there are *four pairs* of rows facing each other. The alley between the rows, where the entrances are, is about 10 feet wide; the alley between the *back ends* of the hives is about 6 feet. This gives room for a wheelbarrow to turn round, and plenty of room for workmen to pass, even with a load of stuff. The rows of hives are as “straight as a string,” as you see on p. 1023, Nov. 15. The ground in these six-foot alleys is as clean and smooth as a brickyard. The wide alleys are now a beautiful and nicely kept garden where we get our supplies for the table. From the stuff planted six weeks ago we have now lettuce, onions, radishes, string beans, and Irish potatoes almost as large as hen’s eggs.

I believe it has been already mentioned that the 500 colonies were, at least most of them, only strong nuclei that had been used last season for queen-rearing. Well, these nuclei built up by December so that they gave 10,000 lbs. of very nice white extracted honey. Now please, friends, do not get wild over this, but remember it is only 20 lbs. per colony, and that nice honey *here* is worth only about 3 cts. per lb. The honey crop so far does not half pay the expense of getting here. The bees fly and get some honey every day; but at this date, Jan. 8, they are getting only about enough to keep the brood going. Without question, there are too many in one spot to give much honey.

I have greatly enjoyed watching them cease flying at night, and starting out in the morning. I picked out the colonies that were first to bring in honey and pollen, and then Mr. Wardell referred to his record and showed me that all I had marked extra had *red-clover queens*. It looks to me just now as if that queen that Ernest made such a stir about by putting a big price on her (\$200) may have been worth to the bee-keep-

ing world *thousands* of dollars. More than 1000 of her daughters have been sent into almost as many apiaries, and reports show, almost every time, greater crops of extracted honey. This particular strain is, perhaps, not the best for comb honey.

Since the above was written I have visited the school. About 100 pupils are enrolled, and three teachers are employed. I am told the buildings were put up and the schools started by the United States. The reading-lesson while we were present was about Christopher Columbus, and I could, therefore, follow it to some extent. Surely we of America should have a warm place in our hearts for Spain and her people, out of respect to the memory of *Columbus*, if for no other reason. In another room the teacher had put a sentence on the blackboard, beautifully written. It was, “*Las margaritas blancas adornan los campos.*” With a little assistance from the postmaster I rendered it, “The white daisy adorns the fields.” The postmaster, Senor Rodrigo, is the only one in the town who speaks English. Through him as interpreter I had quite a talk with the teachers. No such thing as a *Sunday-school* has ever been held. The scholars sometimes sing in the day school; but the teacher said smilingly they made such bad work of it she seldom tried to have them sing. I got acquainted with the children readily by showing them my wheel, and they showed me their writing-books where they had copied the motto on the board. I am sure it would be an easy matter for one who can speak their language to start a large Sunday-school. Can any one tell me how much has been done in this line in Cuba?

TEMPERANCE AND INTemperance IN CUBA.

In one respect there are *no* saloons in Cuba; in another, they are everywhere, even in the little towns and country stores. There are no saloons with *screens* in front, as we have them in America. Liquors are sold in broad daylight, and, in fact, in Havana they are mostly sold out on the walk, you might almost call it. I have seen no intoxicated people, and nowhere in the city did I see *crowds* drinking as we see in the saloons in our American cities. Saloon-keepers themselves have admitted that removing the screens would destroy more than half their trade. I do not think the Cubans are very much given to *beer-drinking*. As nearly as I could determine, the principal drink at these places is an imported wine. Every one of these places furnishes drinking-water free. At the terminus of the electric-car line I saw the vender pass out tumbler after tumbler of pure water, and nobody ever seemed to think of thanking him.

CUBA; COST OF LIVING.

It is too cold now (Jan. 9) for much honey-gathering or queen-rearing. We have no thermometer, but our postmaster said it was down to 50 one night, and I think it must have been 45 last night. There isn’t

a stove in the island that I know of, nor a house with a chimney. Cooking is mostly done with charcoal; but as it costs \$1.00 a bushel, we use wood—mahogany. I chop wood to keep warm, until the sun is up. My catarrh, or grip, is all gone except when I get chilled. My wheel is a real comfort. The paths made by barefooted children are very nice for the wheel, and I can go miles through the fields on these paths. I judge they have never seen a wheel before, the way they gaze and gather round me.

Milk is 10 cts. a quart; eggs 3 cts. each; flour 7 cts. per lb.; Irish potatoes 5 cts.; beans 9 cts., etc. Rice and sweet potatoes are the cheapest. Rice is 5 cts., and sweet potatoes, of the *grower*, only about one cent. They are away ahead of any we have at home. I think I could eat them every meal, with a good relish. Meat of all kinds, pork, beef, venison, etc., is all 20 cts. per lb.; chickens about 30. Oranges and bananas are about a cent apiece. Many things are necessarily dear because they don't keep in this climate, and consumers therefore buy only a little at a time, say 10 cents' worth. Grocers seem to prefer to sell this way, and then they can *guess* at the proper amount for 10 cts., without the bother of fussing with scales. I think an American store with American ways of doing business would be a big success; but, of course, the storekeeper would have to speak Spanish.

Right in the streets, near the stores, and, in fact, close to the schoolhouse, we see children four or five years old stark naked. It saves clothing, and then they are so easy to wash. Some good woman should start a "mothers' meeting" among these people, to correct this and similar things. Who will undertake it?

I fear I have made too much of the objectionable features of Cuba. The climate is beautiful at this time of year, and the people are exceedingly friendly. Theft or crime of any sort seems very rare. Every thing is left outdoors, but so far we have not missed a thing unless it is the little slates on the bee-hives. The small children took some of these at first. Of course, they did not realize the mischief they made.

CUBAN HOMES.

I might almost say "Our Homes," or, rather, "Our *Home*," for it is now a Cuban home. "Our" means Mr. Wardell, whom most of you know about more or less; Stephen N. Green, a Medina boy who has been several years one of our office boys in Medina, but who took a notion to study Spanish a year or more ago, and who was, therefore, chosen to go with Mr. Wardell. Well, besides these two your humble servant has been there for a week or more an inmate of this Cuban home. The most of these homes, at least those in the little town of Paso Real, are built of poles from the woods, covered with leaves from the palm-tree. A building 9x12, that we had made for a kitchen, cost, entire, \$18.00. A couple

of men brought the material and did the work, so the house was ready to "move in-to" for the above sum. I might add, too, that they did it on *Sunday*. They didn't get it all done the *first* Sunday, so they waited until the *next* and then finished it. As there was nothing said, when the bargain was made, about working on Sunday, we could not very well complain. It might have been a little difficult, also, with Stephen's command of Spanish, to explain *why* Sunday was any different from any day—that is, to *these* people.

Posts were first driven into the ground at the four corners; then poles were set up and down about every two feet. Across these, horizontally, still lighter poles were firmly tied with tough bark. These horizontal poles were about 15 inches apart. Now for weather-boarding, imagine a great corn-husk, large enough to wrap up a small-sized man. This comes off the palm-tree where the leaf is attached to the trunk. These husks are laid out on the dewy grass over night until they will flatten out on the walls of the house. To keep them flat, another horizontal pole is tied on the outside, the "big husk" being very firmly tied between the two slender poles. The roof is made of palm or palmetto leaves, very much as we make a thatched straw roof in the North (see picture on p. 1023, issue for Dec. 15). The roof projects a good deal all around to shade the walls; and where there is a porch, it goes over the porch also. To get air, the walls seldom go clear up to the roof; but no storm can beat in, as the roof goes over far enough, and comes down low enough to prevent this. There are no chimneys. The smoke from the fire used in cooking goes right through the porous roof; and I have never seen a smoky apartment in Cuba, even when a fire is first started. We have all this *ventilation* every day in the year, mind you, and I for one like it. There isn't a pane of glass in a house in the town except the schoolhouse, and I almost believe it would be better for the pupils without it there. There are shutters, to be closed in bad stormy weather, but at no other time. Iron rods are across the store windows, to keep out thieves, but I have never heard of any stealing. The floors are usually just the ground tramped hard. When the broom is used often it does not look so *very* bad. I think this dirt floor is cooler in hot weather than a board floor. There are no stoves. Cooking is mostly done with charcoal in an iron bowl made for the purpose. This bowl has a sort of standard, with an opening to let the ashes out, and to let in air. We burn wood, cut up short, in these iron bowls.

STINGLESS BEES, AND BEES IN LOG HIVES IN CUBA.

This morning I visited on my wheel Mr. Ciriaco Gutierrez, three miles away from our place. Although Mr. G. has *100 oxen* pasturing in one field, and other things on his farm to match, he lives in such a house

as I have described. Out under the eaves he had several boxes of stingless bees. These boxes are 8 inches square and 20 long, made of $\frac{1}{2}$ -inch boards. The honey and pollen are stored in cells, or, rather, bottles of wax, set upright with the top open. These cells are large enough, some of them, to hold, say, one or two tablespoonfuls of beautiful honey. They are about the shape and size of a pullet's egg, small end up. When filled they are sealed over. The brood-comb is a separate affair; and as the bees are smaller than common ones, the cells are smaller, and the comb is *horizontal*. Mr. G. was kind enough to make us a present of a hive; and while I write, (out of doors) they are carrying in the honey and pollen at a big rate, close by my head. We have just opened their hive and sampled their honey; but they made no objection of any sort. They keep the entrance to their box contracted by propolis so only one bee can get in or out at a time; and woe betide the insect of any sort that presumes to come near the sentinel that always guards this doorway day and night. Should a robber Italian presume to come near, a dozen dart for him with lightning rapidity and fury. Although they can not sting, they have very powerful jaws to bite. Now, then, you who would like to keep bees, and raise your own honey, but fear the stings, here is your chance. Of course, you will have to come to Cuba, for I do not think they will stand even Florida's cold weather. How much honey can they gather? Mrs. G. said they would give perhaps two quarts of honey per colony per season.

Mr. Gutierrez has also the common black bees, about 25 hives; but they are mostly in horizontal hollow palm logs open at each end. Many of the hives are full of honey, and beautiful white combs are hanging out covered with bees and glistening with new honey. I touched the beautiful comb with my finger, and, remembering I knew "white" in Spanish I said "blanco," and the children who were showing me around were delighted to find I wasn't *altogether* deaf and dumb. If one wanted only honey for his own table, I don't know but that a couple of colonies in hollow logs, in Cuba, might fill the bill pretty well. When the bees are building comb out in the open air it certainly looks very pretty. Some of the hives were just a palm husk (such as I told you about) rolled up, and one hive was just a sheet-iron cylinder. It seemed to make no difference to the bees.

El Nuevo Testamento de Nuestro Señor y Salvador Jesu Cristo.

Dear friends, I am very, *very* happy tonight. I did not *expect* to be happy, and I have not *been* happy, to tell the truth, even in this land of perpetual summer, and so this wave of peace and joy is a surprise to me—yes, one of my "happy surprises."

I told you some time ago that I felt God wanted me in Cuba; and when I saw the thousands who were growing up in igno-

rance and darkness I thought I could see *why* God wanted me in Cuba. The children seemed glad to see me, and, for that matter, the parents also have seemed glad to see me; but what can I do, not knowing their language, and, as my friends accuse me, being too old to learn? Then I inquired if there were not *books* and *papers* for the children and parents, such as we have in such great abundance all over America. But I was told there were none; and on looking about in the homes I have found none. The children sometimes *try* to sing, but not one of them has ever heard a Gospel Hymn, and I fear they have never heard of the gospel *at all*. I asked about missionaries to Cuba, but was told Cuba had none and *didn't want any*. People told me if I encouraged an acquaintance with the children they would be all over us all the time, and steal every thing. I remonstrated, and was laughed at for my faith, as my dear old mother was laughed at years ago for *her* faith in humanity. Perhaps I should explain that there was a *little* ground for fearing the children. When these little friends had learned to smile, and to shake hands with me, although they could not talk, they naturally came about our apiary, and the little slates Mr. Wardell uses were very attractive in their eyes, and I fear some of them were thoughtlessly taken. Now, the value of a slate is a trifle compared to losing our record in rearing high-priced queens. We could not explain the harm they did, for we could not *talk* to them. I finally, however, took a little slate to the schoolteachers and asked them to explain to all the pupils the trouble it must make if they even *picked up* a slate, and I *think* there has been no meddling since. Of course, I made inquiries of every one I met in regard to what had been and was being done to teach the children, but got little encouragement. All seemed to decide they were "no good;" "education would make them more tricky and dishonest," etc. A learned man, and a prominent physician, in Havana, a man who uses neither coffee, tea, tobacco, nor stimulants, a man of means and of high position, said in substance:

"Mr. Root, if you should go on as you propose, for about *four generations*, you might get a child here and there who would tell the truth, and *then* you might make Christians of *some* of them."

I groaned in spirit while I tried to explain to him that our way was to labor first to bring them to "Jesu Cristo," and *then* telling the truth would take care of itself.

Mr. Hilbert (the strawberry and chicken man of Michigan), when he landed here was much inclined to be severe on the Cubans; and, dear friends, I presume I could fill our journal with complaints of them; but God forbid that I should waste my time in dwelling on or telling of the sins of *any* people. We are all responsible, more or less, for all that is wrong. Well, Mr. Hilbert and the rest laughed at my faith; but

still they admitted it *was* a praiseworthy work to be laboring to make the world better. Mr. Hilbert, however, had been with us hardly 48 hours before he confessed we had some good neighbors. He visited the man who had the stingless bees; and although they could talk only by signs, and a little aid from Stephen, he came back with praise of this man that wasn't stinted either.

Last Saturday night we got off the train at Havana while it was raining. On account of our *wheels* we could not get to our hotel, either by cars or cab. We didn't find anybody for some time who could talk our tongue enough to guide us. Finally a very gentlemanly well-dressed Cuban who could talk English a little said he would go with us. Mr. Hilbert offered to pay him, but he declared "not a cent." This man went with us clear across the city; and then, as Hilbert *declared* he could "make it alone" the rest of the way, he consented to turn back. We were soon lost again, however; and just as we decided we *must* bother somebody else with our troubles, this true friend reached us on a run (in the rain). He had been watching us from a distance, fearing we might have more trouble, and this time he piloted us to our hotel door. I wish I had this man's address, so that I might let his kind act be known.

Now you can realize somewhat how it pains me to hear my brother Americans condemn so severely the whole of the Cubans. Even though I can not talk to them I have learned to love them already. I like their musical speech; I like their extravagant gesticulations, which are not only expressive but often possess a degree of grace. One little girl at Mr. Moe's (of Candelaria) showed such an aptness that I told Mrs. Moe she had talent for elocution; and then Mrs. Moe explained that her brother was a lawyer, and had been giving her lessons. At my request she gave a recitation she had once given at their "Fourth-of-July" celebration. Afterward she read some passages of English that Mrs. Moe had taught her, and did it quite well; and Mrs. Moe said she understood the meaning of what she read. Now, this child is thirsting for knowledge, and there are thousands like her. Sunday I found a Congregational church only a short walk from our hotel (71 Prado), and the pastor gave me a lot of little papers illustrated, and in Spanish, by the *American Sunday-school Union*, so you see I was right when I declared there was literature for these children in their own language, if we could only get hold of it; and how shall it ever get to them unless we bestir ourselves, hunt it up, and put it *into* their hands? There is one child especially who lives near our apiary, and she and I have become great friends. I can see in her the promise of a noble woman if she is led aright. Well, when Stephen told me he saw a cigarette in her childish mouth, it did not discourage me; in fact, it only made me more in a hur-

ry to put into her little hands the story of "Jesu" the "Cristo."

In taking an old friend around to see some of the sights of the city, in a beautiful spot (Tacon St., No. 4), near the water's edge we found a little bookstore that read overhead, "American Bible Society." It almost made my heart jump with joy. In a neat glass showcase, almost out on the walk, were open Bibles, one column English and the other Spanish. A New Testament in both languages is only 25 cts. each. Matthew, Mark, Luke, John, and the book of Psalms were each in Spanish, very neatly bound, for only 5 cts. per copy. I knew this before, or *ought* to have known, that I could get all these helps of the Bible Society, to which I have given hundreds of dollars in years past. But this is not all. A very bright little Cuban woman has charge of the store, and she is doing quite a thriving business in selling Bibles and Testaments, and nothing else. She and I soon became friends, you may be sure.

During the war she went north, learned our language, and was given this position. Said I, "Surely, my young friend, you have given *your* heart into the keeping of the dear Savior, so that you can *rejoice* with every Bible that is sold. Is it not so?"

"Oh! yes," she said. "I love to see people buy these books, because I am so sure it will make them happy."

She urged me to call again, and kindly told me what car to take to get to my hotel.

Thank God! thank *God!* there is *one* spot in this great city of almost a quarter of a million where something is sold that, instead of tearing down soul and body, lifts poor weak humanity from "death unto life."

I got out of the car and sat down on one of the seats in one of the beautiful parks at the head of the "Prado." I opened my Spanish Bible and began to study it. Then for the first time it began to dawn on my intellect that a Christian's best book from which to learn Spanish is the *Bible*. I turned first to the title-page from which I have taken my text. "Jesu" the "Cristo" are to me now words sweeter than music. I opened the book to "San Juan IV.," and read verse 10. One who knows a little of Latin can readily follow a good deal of the Spanish; and then came one of my "*happy* surprises." Reading the Bible in another tongue gives another and often a new view of the meaning. We are so familiar with many passages they seem to have lost their meaning to us. The effort to render it in another tongue throws a strong *searchlight* on the words, if I may so express it; and as I read I became very happy, as I said in my opening words. My mother used to be happy in reading her Testament by *moonlight*. Almost a hundred years later, in a strange city, I found great joy in going over the words in a strange tongue. Perhaps I felt happy, too, to think of the little bundle of Spanish books and leaflets I had just forwarded to my friends in Paso Real for their children.

THE "1900" FAMILY WASHER FREE.

Greatest Invention of the Age Labor and Expense of Washing Clothes Cut in Two.

No More Stooping, Rubbing, or Boiling of Clothes.

EVERY HOUSEHOLD NEEDS ONE.

The "1900" Ball-bearing Family Washer



will be sent absolutely free to anyone answering this advertisement, without deposit or advance payment of any kind, freight paid, on 30 days trial. The 1900 Ball bearing Washer is unquestionably the greatest labor-saving machine ever invented for family use. Entirely new principle. It is simplicity itself. There are no wheels, paddles, rockers, cranks, or complicated machinery. It revolves on bicycle ball-bearings, making it by far the easiest-running washer on the market. No strength required, a child can operate it.

No more stooping, rubbing, boiling of clothes. Hot water and soap all that is needed. It will wash large quantities of clothes (no matter how soiled) perfectly clean in 6 minutes. Impossible to injure the most delicate fabrics. As the Supt. of the Savannah Yacht Club says:

"It is a wonder. Our washing is very large and we have always had two women on Monday and one on Tuesday. Our cook and the yard boy now do the washing in 1 hour's much better than before"

NEWMAN, Ills., July 5, 1900.

I can testify that the 1900 is the best washer and the easiest-running machine. It will absolutely clean the clothes, cuffs, and bottoms of ladies' white skirts better than can be done by hand. The washings that took my wife from 5 to 7 hours to put out by hand, can easily be done in 2 hours.—R. A. SKINNER.

KENSEE, Ky., March 21, 1900.

I did a double washing for myself yesterday and made 65 cts. from my borders, besides all my cooking, milking and housework. It takes less soap with your machine than in the old way. I have no need of the washboard any more.

MRS. L. A. BARTON.

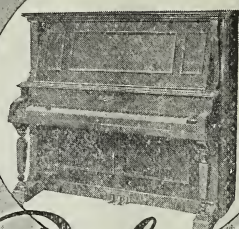
ONALSKA, Wis., Jan. 4, 1901.

We are a family of 5, and as I had a 3 week's wash it was an immense one. Had it all out in 3 hours and never had nicer looking clothes. I did not even put my hands into the water. I can not too strongly recommend the "1900" washer.

MRS. J. M. WILSON.

Write at once for Catalog and full particulars to "1900" Washer Co. State St., Binghamton, N. Y.

The Ideal Piano



Packard

Built anticipating the demand of those satisfied with nothing but the best and looking for a piano of the

Highest Artistic Creation

Are you considering the purchase of a piano? Our proposition will prove more entertaining than any you have had. Catalog and full information free on application.

THE PACKARD COMPANY
P. O. Box 17 Fort Wayne, Indiana

The Best of Everything



THE through train service of the Chicago & North-Western Railway from Chicago to Omaha, Denver and the Pacific Coast on the west, the Black Hills and Dakotas to the northwest and to Milwaukee, Madison, St. Paul, Minneapolis and Duluth on the north, is as nearly perfect as modern and skillful management can make it.

The Overland Limited, a magnificent electric-lighted train, less than three days Chicago to San Francisco, daily.

The Colorado Special, only two nights to Denver from the Atlantic seaboard. Solid train Chicago to Denver.

The North-Western Limited, an electric lighted daily train between Chicago, St. Paul and Minneapolis.

H. R. McCULLOUGH, 3d Vice-President. W. B. KNISKERN, Passenger Traffic Manager. CHICAGO, ILL.



It Isn't the Name

"PAGE" that made the fence famous: it's the quality which the name stands for.

Page Woven Wire Fence Co., Box S, Adrian, Michigan.

POULTRY JOURNAL How to Make Poultry Pay. A paper worth a dollar, but will send it to you one year on trial, including book, Plans for Poultry Houses, for 25c. Sample copy FREE. Inland Poultry Journal, Indianapolis, Indiana.

New Goods in Root's Catalog for 1903.

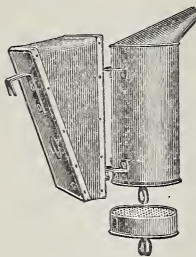
The "A" Bottom-board. This is something entirely new this season. It consists of a 2 $\frac{3}{4}$ -inch rim with a tilting floor-board, allowing an adjustment of depth of entrance to suit season or individual preference of user. This bottom will also be found very valuable for cellar-wintering, and for moving bees there is nothing equals it for convenience and safety. Mr. F. A. Salisbury, Syracuse, N. Y., a bee-keeper and supply-dealer of over 25 years' experience, says: "The new-style 'A' bottom can not be beat. We put up one, and it is *the thing*."

The German Wax-press. This we've improved since a year ago, placing a heavy oak cross-arm above in place of cover-plates. We believe it is perfect in construction.

The Corneil Smoker for 1903 has a new nozzle which is not inclined to topple over at the most inopportune time; this nozzle is supplied with wire-coil handle. The bellows is bound with projected metal bindings which protect the leather, strengthen the bellows-boards, prevent warping of same, and form a very convenient hold in operating the smokers. The general plan is the same as heretofore, but these added improvements make it much superior to any thing we have formerly supplied. Made in three sizes. Prices: Jumbo, \$1.25; Standard, 85c; Junior, 65c. Postage, 25c extra.

Super Springs. The supers sent out this season will contain removable springs instead of the stationary springs as formerly supplied.

Vesuvius Smoker. This is the name of the new smoker we are prepared to furnish this year, which is entirely different from any thing we have heretofore offered. It is a breech-loading hot-blast, with a removable grate attached to cover. The nozzle of this smoker is fastened permanently to barrel. This has the same metal binding as the new Corneil. Price \$1.00. Postage 25c extra.



Brass Smokers. We can supply the Corneil, Vesuvius, and the large-size Bingham smokers with brass stoves at 25c each extra.

Other Goods. We are always on the lookout for improvements in bee-keepers' supplies, etc., and will introduce such as soon as we are satisfied of their superiority over the ones now in use.

Agencies carrying a stock of our hives, etc., will be supplied with these improvements in time for this season's trade. If not posted as to where you can buy our supplies advantageously, write us.



New Edition. With the beginning of the new year we announce the revision of the ABC of Bee Culture, which is not only revised inside but has a new dress as well. The 1903 edition marks the 35th thousand. While the book is, in the true sense, an ABC of bee culture, in that it is adapted to the requirements of beginners, it is also a comprehensive XYZ of the subject, and no veteran can afford to be without it. \$1.20, postpaid.

The A. I. Root Co., Medina, Ohio.

To ST. PAUL and MINNEAPOLIS.

The train of trains is the Pioneer Limited of the Chicago, Milwaukee & St. Paul Railway. It has no equal, and it runs over the Fast Mail route.

Leaves Union Passenger Station, Chicago, 6.30 o'clock every evening.

F. A. MILLER, Gen. Passenger Agt., Chicago.
E. G. HAYDEN, Traveling Passenger Agent,
217 Williamson Bldg., Cleveland.

HONEY QUEENS!

Laws' Leather-colored Queens.

Laws' Improved Golden Queens.

Laws' Holy Land Queens.

Laws' queens are doing business in every State in the Union and in many foreign countries. The demand for Laws' queens has doubled any previous season's sales.

Laws' queens and bees are putting up a large share of the honey now sold.

Laws' stock is being sold for breeders all over the world. Why? Because it is the best to be had.

Remember! That I have a larger stock than ever; that I can send you a queen any month in the year, and guarantee safe delivery; that I have many fine breeders on hand. Price \$3.00 each. Tested, each, \$1.25; five for \$6.00. Prices reduced after March 15. Send for circular.

W. H. Laws, Beeville, Texas

Envelopes!!

Printed to Order \$1 per 1000

Heavy, white, high-cut, size 6 $\frac{3}{4}$. A neat little coupon on each envelope will earn you dollars. Other stationery cheap. For particulars and sample, address at once Howard Co., 516 Masonic Temple, Chicago, Ills.



Strawberry Plants and Seed Potatoes.

How to Grow Biggest Crops. Finest Fruit.

DESCRIPTIVE CATALOGUE FREE. Send for it. Bargains in New Varieties.

FLANSBURGH & PEIRSON, Leslie, Mich.



and everything of the best at right prices for Orchard, Vineyard, Lawn, Park, Street, Garden and Greenhouse, Rarest New, Choicest Old Seeds, Plants, Roses, Bulbs, Small Trees, etc., sent by mail postpaid, larger by express or freight, safe arrival and satisfaction guaranteed. Your address on a postal will bring you our elegant 168 page catalogue free. Direct deal will insure you the best and save you money. Try it. 49 years, 44 greenhouses, 1,000 acres.

THE STORRS & HARRISON CO.,
Box 172, PAINESVILLE, OHIO.



Hammond's Seeds Lead

in vigor, yield, earliness and quality. Better cannot be had. Prices very low. We can save you money. Northern Grown always the BEST. Our handsome 100-page catalog of Garden, Field and Flower Seeds mailed free on request.

Harry N. Hammond Seed Co., Ltd.
BOX 69. BAY CITY, MICH.

A NEW STRAWBERRY.



Estimated yield 700 bu. per acre. Netted \$800.00 per acre for us. Beautiful, round as an orange, large, good quality. 75 other varieties. Many new Raspberries, Blackberries and other fruits, especially some new apples. Our new Catalogue tells all about it. Sent free.

W. N. SCARFF,

New Carlsile, Ohio.



EVERGREENS

Hardy sorts, Nursery grown, for wind-breaks, ornament and hedges. Prepaid \$1 to \$10 per 100-50 Great Bargains to select from. Write at once for free Catalogue and Bargain Sheet. Local Agents wanted.

D. Hill, Specialist, Dundee, Ill.

850,000 GRAPE VINES

100 Varieties. Also Small Fruits. Quality unsurpassed. Warranted true. Very cheap. 3 sample vines mailed for 15c. Descriptive price list free. LEWIS ROESCH, Fredo. Ill. N. Y.

\$15
15
30

DOUBLE YOUR SALARY

Don't spend spare time thinking what you might be if your salary were doubled! *Doing*, not thinking, will make your wish a reality. Our free booklet, "Are Your Hands Tied?" tells you what to do and how to do it. Thousands have already doubled or largely increased their salaries by following our plan. Under our guidance you can do the same. Act today! I. C. S. Text-books make it easy for those already at work to

Learn By Mail

Mechanical, Steam, Electrical, Civil, Mining, Telephone, and Telegraph Engineering; Shop and Foundry Practice; Mechanical Drawing; Architecture; Plumbing; Sheet-Metal Pattern Drafting; Chemistry; Ornamental Design; Lettering; Bookkeeping; Stenography; English Branches; Teaching; Locomotive Running; Electrotherapeutics; German; Spanish; French.

Circular free. State subject that interests you.

INTERNATIONAL CORRESPONDENCE SCHOOLS,
Box 799, SCRANTON, PA.

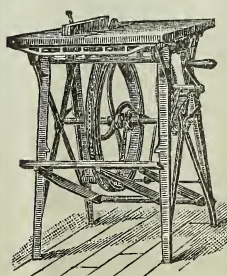
The Deming Field Sprayer

A model implement for acreage work on Potatoes, Strawberries, Small Nursery Stock, etc. Sprays 4 rows of potatoes at once and adjusts for wide or narrow rows.

One Man Can Operate.

Can be attached to any barrel sprayer and fitted to any wagon. Fitted with famous Bordeaux or Deming-Vermorel nozzles. We fit everybody's needs in bucket, barrel, knapsack and other sprayers. Write for free spraying catalogue.

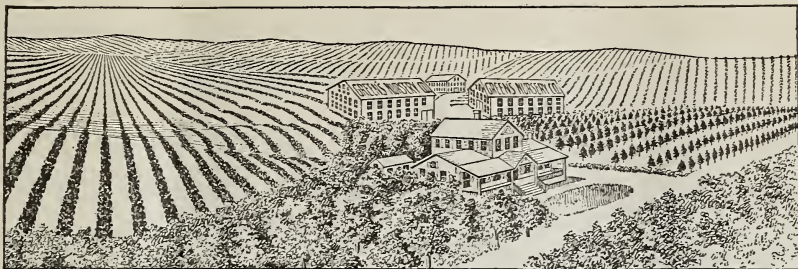
THE DEMING CO., Salem, Ohio.
Henton & Hubbell, Western Agts., Chicago, Ill.



BARNES' Hand and Foot Power Machinery.

This cut represents our combined circular saw which is made for bee-keeper's use in the construction of their hives, sections, boxes, etc., etc.

Machines on Trial. Send for illustrated catalogue and prices. Address W. F. & Jno. Barnes Co., 545 Ruby St., Rockford, Illinois.



View of Green's Nursery Co. Farms, Rochester, N.Y.

Home of the Thanksgiving Prune, Red Cross Currant, Corsican Strawberry, Rathbun Blackberry, Wilder Early Pear, Worden Seckel Pear, York State Prune, American Blush Apple, and other new and rare varieties of fruit. Established 1876. We offer for sale 750,000 apple, cherry, peach and other orchard trees, and millions of small fruit plants, grape vines, roses, etc. Our new catalogue is double the ordinary size. We give one new Thanksgiving Prune tree (worth \$1.50) free with each early order of \$5.00. Our specialties are: Apple, 16c.; Peach, 12c.; Cherry, 15c.; Small Fruit Plants, Roses, Vines. 100-page catalogue free. 2 new Red Cross Currants mailed for 10c. Secrets of Fruit Growing, 150 photos, 10c. Copy Green's Fruit Grower free. Send for our surplus list. Good salary paid for work at home.

GREEN'S NURSERY CO., Rochester, N. Y.

Burpee's Seeds Grow

Probably you have heard of this famous motto for many years but have you proved for yourself that Burpee's Seeds are the

BEST that Grow?

If not, write to-day for Burpee's Farm Annual for 1903—so well-known as "The Leading American Seed Catalogue." It is an elegant book of 184 pages, with beautiful colored plates and will be sent FREE to planters everywhere;—to others upon receipt of 10 cents, which is less than cost per copy in quarter million editions. Write TO-DAY. Do not delay! It is sufficient to address simply

BURPEE, Philadelphia

Salzer's Rape gives Rich, green food at 25c a ton

BUY NORTHERN GROWN SEEDS

FARM SEEDS

SALZER'S SEEDS NEVER FAIL!

1,000,000 Customers

Proudest record of any seedsman on earth, and yet we are reaching out for more. We desire, by July 1st, 300,000 more and hence this unprecedented offer.

\$10.00 for 10c.

We will mail upon receipt of 10c. in stamps our great catalogue, worth \$100.00 to any wide awake farmer or gardener together with many farm seed samples, Teosinte, Beardless Barley, Bronus, Rape, etc., etc., positively worth \$10.00 to get a start with, upon receipt of but 10c.

Please send this adv. with 10c. to Salzer.

JOHN A. SALZER SEED CO. LACROSSE, WIS.

SPELTZ— What is it! Catalog tells.

catalog alone, 5c. Send at once.

WHEN YOU BUY EGGS
YOU WANT GOOD EGGS

WHEN YOU BUY SEEDS
YOU WANT

GOOD SEEDS

Moral: PLANT OURS

WRITE FOR CATALOGUE

NORTHROP KING & Co.

SEEDSMEN
MINNEAPOLIS • MINN.

SPRAY PUMPS

The Pump That Pumps

SPRAY PUMPS

Double-acting, Lift, Tank and Spray

PUMPS

Store Ladders, Etc.

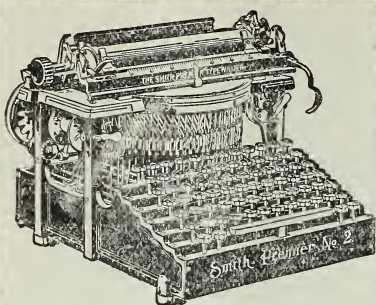
HAY TOOLS

of all kinds. Write for Circulars and Prices.

Myers Stayon Flexible Door Hangers

with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—"Stayon." Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.

F. E. MYERS & BRO.
Ashland, Ohio.



Why Buy a Smith Premier Typewriter

?

BECAUSE of its Simple, Frictionless Mechanism.

BECAUSE of its Complete Keyboard.

BECAUSE of its Automatic Typecleaning Device.

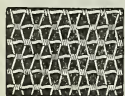
BECAUSE of its Perfect Work.

BECAUSE of its Durability.

Catalogue Sent Free.

The Smith Premier
Typewriter Co.,

158 Prospect, Cleveland, O.



FENCE! STRONGEST MADE. Bull Strong, Chicken-Tight. Sold to the Farmer at Wholesale Prices. Fully Warranted. Catalog Free.

COILED SPRING FENCE CO.
Box 101, Winchester, Indiana, U. S. A.

Mr. A. I. Root's Writings

of Grand Traverse territory and Leelanau Co are descriptive of Michigan's most beautiful section reached most conveniently via the

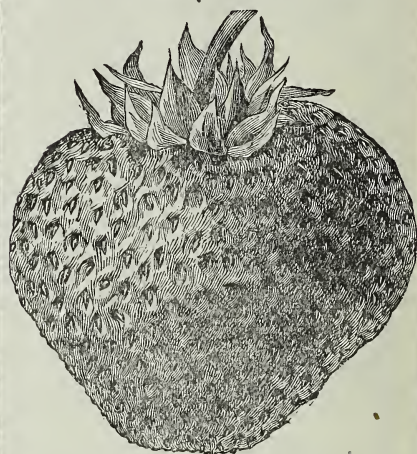
PERE MARQUETTE R. R.

For pamphlets of Michigan farm lands and the fruit belt, address J. E. Merritt, Manistee, Michigan.

One Cent buys a postal card

which will carry your address for

Great Crops of Strawberries and How to Grow Them



The best book on strawberry-growing ever written. It tells how to grow the biggest crops of big berries ever produced. The book is a treatise on **Plant Physiology** and explains how to make plants bear **big berries and lots of them.** The only thoroughbred scientifically grown **strawberry plants** to be had for spring planting. One of them is worth a dozen common scrub plants. They grow **big red berries.** There is **GOLD** in strawberries and bees if you go at it right. The book tells how to dig it out. The book is sent free to all readers of GLEANINGS IN BEE CULTURE. Send your address to me.

R. M. KELLOGG,
Three Rivers, Mich.

BEST SMALL FRUITS.

Standard and improved varieties of Raspberries, Blackberries, Gooseberries, Currants, Grapes, Strawberries, etc. Every plant grown and guaranteed by me. Ship only clean, vigorous, well rooted, fresh dug plants that give results. Write for late catalog.

Allen L. Wood, Wholesale Grower, Rochester N.Y.

450,000 TREES

200 varieties. Also Grapes, Small fruits etc. Best rooted stock. Genuine, cheap. 2 sample currants mailed for 10c. Desc. prices list free. LEWIS ROESCH, Fredonia, N. Y.

Root's Goods in Central Michigan!

Sold at their prices. Present given with each order amounting to \$2 or over. List sent free.

W. D. Soper, Rural Route No. 3, Jackson Michigan.

A Man Can Not Know too Much

about his business. No saying is truer than "Knowledge is power." Many bee-keepers have failed who might have succeeded, and many who have succeeded might have enjoyed greater success had they possessed all of the knowledge it would have been possible for them to secure concerning their business. When I was a bee-keeper, before I began publishing the REVIEW, I found it to my interest to read all of the bee-journals published. Time and again a single item was

worth dollars to me. I doubt if it would be possible for a practical bee-keeper to read the BEE-KEEPERS' REVIEW one year without gaining information worth many times its cost; and, just at present, a new subscriber can get two years for the price of one. That is, to any one who sends \$1.00 for the present year, twelve back numbers will be sent free. Most of them, but not all, will be 1902 numbers, 24 numbers for only \$1.00.

W. Z. HUTCHINSON, Flint, Mich.



IRON AGE

For over two generations the Iron Age implements have been helping farmers to do better. Every year in that time we have been making these labor savers better than before. To-day they are successful beyond question; durable beyond comparison; economical beyond doubt.

No. 6. Iron Age Double and Single Wheel Hoe, Hill and Drill Seeder.

No. 60. Iron Age Pivot Wheel Cultivator.

Improved Robbins Potato Planter.

Write to-day for a free copy of the Iron Age Book for 1903; full of facts that will save you money, time and strength all through the year.

BATEMAN MFG. CO., Box 120, Grenloch, N. J.

"Union" TEAM and FARM HARNESS for \$16.95

Strong plump stock. Perfect in size, shape and finish. Traces, 1½ in. double & stitched. Pads, hook and terret. Lines, ¾ in. 18 ft. A **GREAT LEADER** because it gives satisfaction first, last, and always. Our "Union" Harness will please you in price and quality. Special, two heavy whole leather team collars \$3 **EVERY HARNESS A BARGAIN.** We make all styles of harness.

carts, runabouts, road wagons, delivery and express wagons, spring wagons, trucks, farm wagons, buggies, phaetons, stanhopers, surreys. Also single buggy, truck and surrey harness, express, spring wagon, farm, team and lumber harness.

CASH BUYERS' UNION, Manufacturers of Harness and Vehicles, Dept. 21

"Union" IDEAL BUGGY for \$39.95

Has no equal for comfort, style and wear at the price. We guarantee its excellence for two years. The price means quality. Has genuine leather trimming & leather quarter top. Long distance, self oiling axles. Silver trimmings. 1905 style "UNION" BUGGIES STAND THE TEST OF TIME.

We guarantee safe delivery and satisfaction. **NEW CATALOG** free on request, the largest vehicle and harness catalog issued. Contains the choicest line of

Send for Free Catalog

CHICAGO, ILL.



The "Star" Ventilator.

Storm proof, effective; for ventilating all kinds of buildings, barns, stables, and factories of all kinds. Send for illustrated booklet

Merchant & Co., Inc.,
Philadelphia, Brooklyn,
New York, and Chicago.
M'nf'rs High-grade Bright Tin



CATALOG FREE!

BAR. and W. PLY. ROCKS, W. WY-ANDOTTES, B. MINORCAS, LANGSHANS, I.T. BRAHMAS, W. and BUFF LEGHORNS, HOUDANS.

As good as you pay double for or your money back. **W. W. SHAMPANORE,**
Box D, Little Silver, N. J.

HIGH CARBON COILED SPRING WIRE

INDIANA STEEL & WIRE CO.
BOX 609 MUNCIE, INDIANA.

Queens == 1903 == Queens.

We have ten different yards five to twenty miles apart, where Italians, Cyprians, Holylands, Carniolans, and Albinoes are bred for business. Tested queens, \$1.50; \$8.00 for 6; \$15.00 per dozen. Untested, \$1.00 each; \$5.00 for 6; \$9.00 per dozen. Our best and finest breeders, \$5.00 each. One and two frame nuclei a specialty. Bees and Queens in any quantity to suit purchaser. Safe arrival and reasonable satisfaction guaranteed.

The Jennie Atchley Co., Box 18, Beeville, Tex.



H-T-T published monthly; 64 pages; tells all about hunting, trapping, and raw furs. Sample copy 10 cents. **Hunter-Trapper-Trapper, Gallipolis, Ohio.**
Box 31.

CRUSHED OYSTER SHELLS. 100 lbs., 49c; 200 lbs., 95c; Mica Crystal Grit, 100 lbs., 57c; 200 lbs., \$1.07, or 100 lbs. each, \$1. Poultry need both. Order now. Catalog free. **WISE & CO., Butler, Ohio.**

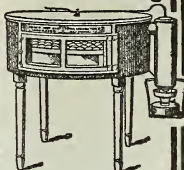
1200 FERRETS. All sizes; some trained; first-class stock. New price list free. **N. A. KNAPP, Rochester, Lorain Co., Ohio.**

Counting Chicks Before Hatching

is not safe unless you
have an

IOWA

ROUND INCUBATOR

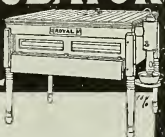


R. C. Bauerminster, Norwood, Minn., got 493 chicks from 503 eggs. He followed directions, the machine did the work, because it was built on right principles and by good workmen. The IOWA has fiber-board case, does not shrink, swell, warp or crack. Regulation and ventilation perfect. Our free book gives more testimonials and full particulars. Everything about incubation free.

IOWA INCUBATOR COMPANY, BOX 197, DES MOINES, IOWA

ROYAL INCUBATOR

30 DAYS FREE TRIAL



We're so sure that we make the most satisfactory incubator in the world that we'll send you one on 30 days free trial. Try a hatch. If you like it, keep it. What do you say?

Handsome Catalogue Free.

Royal Incubator Co.

Dept. 503, Des Moines, Ia.

The Automatic Sure Hatch



30 Days Free Trial

of the best incubator ever made. New automatic, direct-action regulator—greatest improvement ever made in incubators. No complications. Sold at reasonable price. Don't pay double for out of date machine. Large illustrated catalogue free.

SURE HATCH INCUBATOR CO.,
Clay Center, Neb. or Columbus, Ohio.

TRY AN IDEAL.

J. W. Miller's incubator—made by the man who knows. It is really self-regulating.

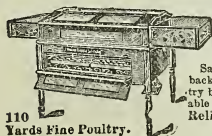
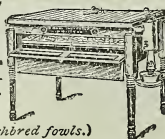
30 DAYS FREE TRIAL

Weget no money until you are perfectly satisfied. Poultry Book Free.

J. W. MILLER CO.,

Box 48, Freeport, Ill.

(Poultry supplies and thoroughbred fowls.)



110
Yards Fine Poultry.

RELIABLE INCUBATORS AND BROODERS.

Satisfaction guaranteed or your money back. Send 10 cents postage for great poultry book just issued, explaining remarkable guarantee under which we sell.

Reliable Incubator & Brooder Co.,
Box B-49 Quincy, Ill.

SUCCEED WITH A SUCCESSFUL

INCUBATORS

are usually bought because the purchaser wants to make more money out of his chicks. Whether he does so or not depends entirely on whether he gets the right kind.

The Successful Incubators

make money. You don't have to test them. We do that. We know what they will do when they are sent out. If you want to find out about a good low priced machine that always works and never shrinks or swells with use, write for one of our catalogues, 5 in 5 languages. An incubator book that goes to the heart of things and tells the truth. Sent free anywhere. Write now.

DES MOINES INCUBATOR CO.,

Dept. 503 Des Moines, Ia. Dept. 503 Buffalo, N. Y.

\$12.80 For 200 Egg INCUBATOR

Perfect in construction and action. Hatches every fertile egg. Write for catalogue to-day.

GEO. H. STAHL, Quincy, Ill.



200 EGG SIZE THERE IS ONLY ONE
\$9.50 FOR 100 EGGS INCUBATOR
\$5.00 FOR SPECIFIC TO OUR PATRONS
SELF REGULATING 30 DAYS TRIAL
GUARANTEED NO CATCH AND PREMIUM LIST HATCHES EVERY GOOD EGG
BUCKEYE INCUBATOR CO. SPRINGFIELD, OHIO



GREAT POULTRY BOOK

My 1903 catalogue. Elegant in illustration, full of practical hints, describes 66 breeds of prize winners. Low prices for birds and eggs. Book postpaid, 10 cents. Calendar for 1903 on cover.

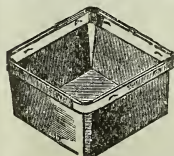
R. H. GREIDER, REEEMS, PA.

Fruit Packages of All Kinds.

— ALSO —

BEE-KEEPERS' SUPPLIES. . .

Order your supplies now before the busy season catches you. Price list free. Address



BERLIN FRUIT-BOX COMPANY,
Berlin Heights, - - Erie County, Ohio.



SPLIT HICKORY

is the name that stands for the best that can be made in
BUGGIES, CARRIAGES and SURREYS
This is our

SPLIT HICKORY SPECIAL \$47.50

It has all the special features of a \$100.00 job. Space does not permit description here.


We send it anywhere on **30 DAYS' FREE TRIAL** to prove all our claims.
Send for catalog. Our mammoth new catalogue gives descriptions and prices on our full
line of exclusive styles. A full line of harness at wholesale prices.

OHIO CARRIAGE MFG. CO., Station 27, Cincinnati, Ohio.

DEAL DIRECT WITH THE FACTORY

Don't pay retail price for carriages or harness. Write for our catalogue and learn about our system of selling direct from factory to customer. Two profits are saved to you. Satisfaction is guaranteed, or you can return the purchase and we will pay freight charges both ways. We have the largest assortment of buggies, surreys, phaetons, carriages, and other high grade vehicles, as well as harness and horse accessories, in America. Write for the catalogue to-day.

THE COLUMB'S CARRIAGE & HARNESS COMPANY,
Factory and General Office, COLUMBUS, O. } Write to
Western Office and Distributing House, ST. LOUIS, MO. } nearest office.

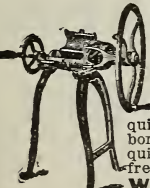



WILSON'S

New Green Bone, Shell and Vegetable Cutter for the Poultryman.

Also Bone Mills for making phosphate and fertilizer at small cost for the farmer, from 1 to 40 horse-power. Farm Feed Mills grind fine, fast and easy. Send for circulars.

WILSON BROS., Sole Mfrs., Easton, Pa.




A FRIEND

to poultrymen—to chickens.

Adam's GREEN BONE Cutter

It runs easily because it has ball bearings. It cuts clean, quickly and perfectly. Makes a fine bone shaving such as chickens require. Before you buy send for free catalogue No. 39.

W. J. ADAM, JOLIET, ILL.



MANN'S LATEST MODEL BONE CUTTER MAKES HENS PAY

because it gives them food that makes them lay. Open hopper and automatic feed make cutting always easy. Sent on

TEN DAYS' FREE TRIAL.

No pay until you prove that it cuts faster and easier than any other. Isn't that better for you than to pay cash in advance for a machine you never tried? Catalogue free.

F. W. MANN CO., Box 87, Milford, Mass.

WANT EGGS?

The HUMPHREY

Open Hopper

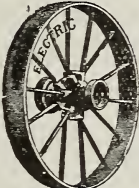
GREEN BONE and VEGETABLE CUTTER

doubles egg yield, cuts feed bill in half. Guaranteed to cut more bone in less time, with less labor than any other. Send for special trial offer and handsome catalogue.

HUMPHREY & SONS,
Box 51, Joliet, Illinois.



Wagon World-Awheel.



Half a million of these steel wheels have been sent out on our own wagons and to fit other wagons. It is the wheel that determines the life of any wagon, and this is the longest lived wheel made. Do you want a low down Handy Wagon to use about the place? We will fit out your old wagon with Electric Wheels of any size and any shape tire, straight or staggered spokes. No cracked hubs, no loose spokes, no rotten felloes, no resetting. Write for the big new catalogue. It's free.

Electric Wheel Co., Box 95 Quincy, Ills.

NOTHING AS GOOD ADVERTISED ANYWHERE.

Sewing Machines

\$7.25 TO \$26.50

Shipped on approval



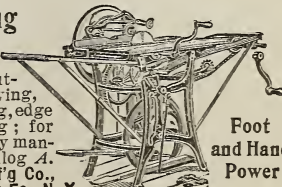
anywhere in U. S. No money in advance. All kinds, all styles, direct from factories. Avoiding salesmen's expenses and dealers or agents exorbitant profits saves you from \$10 to \$15. Estab. 1853. 250,000 sold. Testimonials from every state. Reference: First Nat'l Bank, Chicago. Send for big illustrated catalogue showing all styles and samples of work.

CASH BUYER'S UNION, Dept. K245 Chicago

Swell Front
Ball Bearing
Guaranteed for 20 years.

Wood-working Machinery.

For ripping, cross-cutting, mitring, grooving, boring, scroll-sawing, edge moulding, mortising; for working wood in any manner. Send for catalog A. The Seneca Falls M'fg Co., 44 Water St., Seneca Falls, N. Y.



Foot and Hand Power

Gleanings in Bee Culture

[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

The A. I. Root Co., - - Medina, Ohio.

A. I. ROOT, Editor of Home and Gardening Dep'ts.
E. R. ROOT, Editor of Apicultural Dept
J. T. CALVERT Bus Mgr.
A. L. BOYDEN, Sec.

TERMS. \$1.00 per annum; two years. \$1.50; three years, \$2.00; five years, \$3.00, *in advance*; or two copies to one address, \$1.50; three copies, \$2.00; five copies, \$3.75. The terms apply to the United States, Canada, and Mexico. To all other countries 48 cents per year extra for postage.

DISCONTINUANCES. The journal is sent until orders are received for its discontinuance. We give notice just before the subscription expires, and further notice if the first is not heeded. Any subscriber whose subscription has expired, wishing his journal discontinued, will please drop us a card at once; otherwise we shall assume that he wishes his journal continued, and will pay for it soon. Any one who does not like this plan may have his journal stopped after the time paid for by making his request when ordering.



SWEET CORN ADVANCED.

There seems to be a shortage of sweet corn; and our stock could not be replaced at much higher prices; we therefore quote, till further notice, pint, 9 cts; quart, 15 cts; peck, \$1.00 bushel, \$3.75. Please note, also, that a misprint occurred in the price of Hubbard squash seed. The price of a single pound should read 75 cents.

SUPER-SPRINGS.

Referring to the new-style super-spring shown in our catalog, we have been greatly hindered and delayed in securing wire and tools for bending, and we now find that we can produce more easily a flat steel tempered spring, curled up with a small hook on each end, which will be very much better than either the old or the new wire spring, in that it will more surely stay where it is placed, and is not so liable to get out of place as the wire. It can be very easily inserted or removed. We expect to be ready to furnish them within a few days. Most of the supers which we have sent out so far in this year's shipments have contained the old-style springs. If any wish to try the new we will mail enough for 5 supers for 15 cents in stamps. Then you can determine for yourselves whether you like the new or the old better.

NEW-STYLE SMOKERS.

As will be seen from our new catalog, the standard Cornell smoker, which has become so popular with those who have tried it in comparison with others, has been modified somewhat in design, and two new sizes added—a Jumbo with 4-inch barrel, and a Junior with 2½-inch barrel. We have also added the new breech-loading smoker Vesuvius to our family of smokers. The new dies for these new designs have been completed only within the past few days, and a good many of the standard Cornells of the old style, and of part old and part new, are in the hands of dealers, and will be used in filling orders till they are disposed of. If you must have the latest style you will need so to specify in your order or you may get one of the old as long as any of this stock remains.

COLD-FRAME OR HOT-BED SASH OF CYPRESS.

We are now prepared to furnish sash of cypress, having secured a supply of this lumber for the purpose. It is one of the most durable of woods for outside use, and is largely used for greenhouse bars and sash. It is light and strong, as well as durable. We are changing the dimensions of the bars so that they will shut off less light from the seed-bed. The thickness will be 1½ inches instead of 1¾, as formerly, with tenons ¼ inch thick instead of ¾ inch. The outside bars are 2½ inches wide instead of 3¼. The sash will still be 6 feet long, but 3 ft. 2½ inches, or 6 ft. 3 will still be 6 feet long, but 3 ft. 3 inches wide, instead of 3 ft. 4 inches, and, as regularly furnished, will take four rows of 8x10 glass. We can also supply them for 3 rows of 11-inch glass. The price shipped, knocked down, will be 80 cents each; \$3.75 for 5, or \$7.00 for 10.

We still have the old-style pine sash, 3 ft. 4 by 6 ft., which we will sell at the same price if any prefer them. At the present price of pine lumber they are worth more money, but we will close them out at this price to any who may want them. Glass, 8x10, for sash at \$3.00 per box; 5 boxes at \$2.85; 10 boxes at \$2.70.

Great Poultry Book Free.

Those of Our People who are interested in Incubators, Brooders, all kinds of Poultry Supplies and the poultry industry in general, should send at once for a copy of the new 1903 book—"How to Make Money with Poultry and Incubators." It is published by the Cyphers Incubator Co., of Buffalo, N. Y. It will be mailed free to all of our people who will write to them asking for it. The greatest recommendation we can give this book is to say that it is the best thing the Cyphers people have yet published. It's the only book we know of that treats the whole subject of profitable poultry growing, etc. There are special chapters on the different branches of the poultry business—duck growing, broiler raising, egg farming, winter production of chickens, broilers, etc. These subjects are treated by the best experts in the country. There are hundreds of photographic views of the largest poultry plants all over the United States, England, Germany, Holland, New Zealand and other foreign countries. There is too much that is good to tell it all in this small space. Send for the book. FREE, postage paid during the next thirty days, if you mention on this paper.



Those of Our People who are interested in Incubators, Brooders, all kinds of Poultry Supplies and the poultry industry in general, should send at once for a copy of the new 1903 book—"How to Make Money with Poultry and Incubators." It is published by the Cyphers Incubator Co., of Buffalo, N. Y. It will be mailed free to all of our people who will write to them asking for it. The greatest recommendation we can give this book is to say that it is the best thing the Cyphers people have yet published. It's the only book we know of that treats the whole subject of profitable poultry growing, etc. There are special chapters on the different branches of the poultry business—duck growing, broiler raising, egg farming, winter production of chickens, broilers, etc. These subjects are treated by the best experts in the country. There are hundreds of photographic views of the largest poultry plants all over the United States, England, Germany, Holland, New Zealand and other foreign countries. There is too much that is good to tell it all in this small space. Send for the book. FREE, postage paid during the next thirty days, if you mention on this paper.

Low Rates TO California.

Via Chicago, Milwaukee & St. Paul and Union Pacific line.

February 15 to April 30, 1903.

Only \$33 Chicago to San Francisco, Los Angeles, and many other California points. One-way, second class, colonist tickets.

Will be glad to send you additional information.

F. A. MILLER, Gen. Passenger Agt., Chicago.

E. G. HAYDEN, Traveling Passenger Agent, 217 Williamson Bldg., Cleveland.

10¢ Sheet Music

Also Books. Write for prices on anything you want.

M. T. Wright, Medina, O.

Do You Buy Queens

If so, it will pay you to investigate my claims. I breed from best honey-gathering stock, and rear queens by best-known methods. I guarantee good queens, and beautiful, gentle bees. Some of my customers have bought 100 to 300 queens per year for *their own yards*. Write for circular and information.

J. B. CASE, Port Orange, Fla.



POULTRY PAPER, illust'd, 20 pages, 25 cents per year. 4 months' trial 10 cents. *Sample Free*. 64-page practical poultry book free to yearly subscribers. Book alone 10 cents. *Catalogue of poultry books free. Poultry Advocate, Syracuse, N.Y.*

Wants and Exchange.

Notices will be inserted under this head at 10 cts. per line. You must **SAY** you want your adv't in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange stationary gasoline engines 1 to 10 h. p., bicycle motors, and frames for motor cycles, for wood and metal working machinery, worn out gasoline engines, etc.

TWIN CITY BICYCLE CO., La Salle, Ill.

WANTED.—Experienced bee-keeper with some capital, as partner in the business, in Cuba.

M. B. L., Prado 7, Havana, Cuba.

WANTED.—A second-hand steam engine, from 2 to 4 horse-power. State make and condition, also lowest cash price.

C. E. GLAZIER, Dover, Delaware.

WANTED.—To exchange a 22-cal. 27-shot Winchester rifle, and an outfit complete for making crayon portraits, for a good incubator, bicycle, graphophone, or camera.

D. B. THOMAS, Odin, Mo.

WANTED.—To sell or exchange for bees or supplies one McCormick corn-shredder, been used one week, just as good as new; and one McCormick corn-harvester, been used two seasons.

C. L. PINNEY, LeMars, Iowa.

WANTED.—To sell 125 colonies of bees in hives of 8 L. Hoffman frames. Price, \$3.00 each; also complete outfit for 200 colonies at a bargain. No failures in 9 years. Good home market.

T. H. WAALE, Sara, Clarke Co., Wash.

WANTED.—To sell 10 bbls. White Bliss Triumph potatoes—a little sunburned or green, but all right for seed—not sorted, \$2.00 per barrel; will ship in the spring.

J. W. BITTENBENDER, Knoxville, Iowa.

WANTED.—To exchange a large list of second-hand goods, as good as new, for foundation, mill, and extracted honey. Address

QUIRIN THE QUEEN-BREEDER, Parkertown, Ohio.

WANTED.—To sell for cash, 5-gal. square tin cans, used for honey, at about half price of new cans. Also elegant exhibition 12-lb. no-drip honey-cases for plain Danz and $4\frac{1}{4} \times 4\frac{1}{4}$ sections; made for Pan-American. For prices, etc., address OREL L. HERSHISER, 301 Huntington Ave., Buffalo, N. Y.

WANTED.—To sell 600 stands of Italian bees in Simplicity hives in lots to suit buyer. Will deliver the same to any point in the West if desired. Correspondence solicited.

TYLER BROS., Nicolaus, Cal.

WANTED.—To exchange my new price list of 2000 ferrets, now ready to ship, for your address on a postal card.

N. A. KNAPP, Rochester, Ohio.

WANTED.—To sell a 10-h.p. horizontal engine with upright boiler, with pump, smoke-stack, and all connections, for \$125.

J. W. BITTENBENDER, Knoxville, Iowa.

WANTED.—Comb to render into wax; will pay cash. A. P. LAWRENCE, Hickory Corners, Mich.

WANTED.—To exchange Angora goats for any thing useful.

ED. W. COLE & Co., Kenton, Ohio.

WANTED.—To exchange step-ladders or common ladders for a tent about 20'x40, old or new.

EDWARD GIGAX, Archbold, Ohio.

WANTED.—To print your return envelopes, No. 6, 25 for 10c.

THE BEE FARMER,
Woodstown, N. J.

WANTED.—To sell good catnip seed for 10 cents an ounce, or 3 ounces for 25 cents.

O. S. HINSDALE, Kendrick, Idaho.

WANTED.—Bees in Delaware and Washington Co., N. Y.

S. W. MUDGE, Glen Cove, N. Y.

WANTED.—To exchange extracted honey for Cypher's incubator, 1901 or 1902 make. I often have a place for a good bee-keeper's boy. Buy and sell bees, and second hand hives wanted.

W. L. COGGSHALL, R. 12, Groton, N. Y.

WANTED.—Names and addresses of those who want good books or sheet music. Ask for what you want.

M. T. WRIGHT, Medina, Ohio.

WANTED.—To exchange a Root foundation-mill, 10 inch, almost new, for offers.

W. H. LAWS, Beeville, Texas.

WANTED.—To sell 50,000 well-rooted strawberry-plants, grown from new beds, Senator Dunlap, and 6 other choice varieties. 25 to 40 cts. per hundred; 10 per cent discount in lots of 500. Also eggs from gilt-edge Barred Rocks, and Vandresser laying strain. White Leghorns, \$1.00 per 15.

P. HOSTETLER, East Lynne, Mo.

WANTED.—Bee-man from April 1st to manage home and out-apiaries, with assistance. Write, stating experience and wages required to W. R. ANSELL, Apiarist, G. N. Ry., St. Paul, Minnesota.

WANTED.—To sell thick-top L. frames, in flat, from yellow pine, at \$8.00 per 1000, f. o. b.

G. F. TUCKER, Blountstown, Fla.

WANTED.—To exchange an Odell typewriter and one Clipper bicycle for a good camera or Kodak, observatory-hive, bees, or supplies. Address

L. F. WEAVER, Wingate, Ind.

WANTED.—An experienced man to take charge of apiaries. Address with references.

DR. GEO. D. MITCHELL & Co., Ogden, Utah.

WANTED.—You to read what A. I. R. says on page 36 of GLEANINGS, Vol. 31. Order this book at once, and write me for prices on ginseng seed, or other information you want.

A. F. YOUNG, Cave City, Ky.

WANTED.—Two hundred stands of bees in any kind of hives, Langstroth preferred; must be cheap.

J. E. HAND, Wakeman, Ohio.

WANTED.—To sell 260-acre farm, apiary with 75 hives attached; 100 acres in cultivation; generally level and productive; new two-story house, barns, etc.; ten miles to county site and station; good community.

J. A. CLEMENTS, Green Bush, Walker Co., Ga.

WANTED.—To exchange Dadant uncapping-cans for cash, honey, or any thing I can use in the apiary.

O. H. HYATT, Shenandoah, Ia.

WANTED.—For cash, 250 or 300 colonies of bees in ten-frame hives; extra combs also. Prefer those that have been run for extracted honey in the Southern States. State prices on cars and what you have for sale.

J. D. RHODAS, Las Animas, Colo.

WANTED.—Owing to recent death of my husband I want to sell my bees and entire outfit, consisting of 200 colonies of bees now located in three apiaries; two locations on Mangrove Island to move bees to in summer, three boats—including one gasoline launch, all necessary appliances to run for extracted honey. To those interested I will give full particulars.

MRS. ANNA M. KING, Wabasso, Florida.

Now Ready!

Sixty-four Page Catalog

of every thing bee-keepers need. Illustrated and fully described. Especially valuable to beginners for the information it contains. Send your address on a postal and get it now. Established 1884.

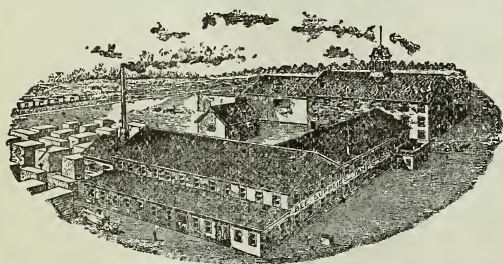
J. M. Jenkins,
Wetumpka, Elmore Co., Ala.

PAGE & LYON, New London, Wisconsin.

MANUFACTURERS OF
AND DEALERS IN . . .

BEE-KEEPERS' SUPPLIES. . . .

Send for Our Free New Illustrated
Catalog and Price List. . . .



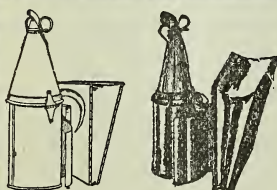
BEE-SUPPLIES.

Best-equipped factory in the West; carry a large stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

— AGENCIES —

Kretchmer Mfg. Co., Box 60, Red Oak, Ia.

Trester Supply Company, Lincoln, Neb.
Shugart & Ouren, Council Bluffs, Ia.
Chas. Spangler, Kentland, Ind.



BINGHAM SMOKER.

Dear Sir—Inclosed find \$1.75. Please send one brass smoke-engine. I have one already. It is the best smoker I ever used.

Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER

Bingham Brass Smokers.

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's four-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, \$1.50; 3½-inch, \$1.10; 3-inch, \$1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 23 years. Only three larger ones brass.

T. F. Bingham, Farwell, Michigan.

Established 1884.

BEE-KEEPERS' SUPPLIES!



In placing your orders for the coming season of 1903 do not forget that we always carry a stock of THE A. I. ROOT COMPANY'S goods that are needed in a well-equipped apiary. We can sell you these goods as cheap as they can be had from the factory, owing that we get carload shipments from which we can supply your wants on short notice, and at a saving of freight.

We ask a trial order to convince you that we can serve you right. Send for our 40-page catalog, free.

 BEESWAX WANTED. 

JNO. NEBEL & SON,

High Hill, Missouri.

Headquarters in

CALIFORNIA !

We wish to remind GLEANINGS readers that we are again ready to serve them with whatever they require in Bee-keepers' Supplies. We not only have a good assortment of our own manufacture but we can furnish a

Full Line of Root's Sundries

such as Smokers, Sections, Cowan Extractors, etc. Let us have your name and address at once, and we will send you our catalog.

Union Hive & Box Co.

Los Angeles, Cal.



Minnesota,
Dakota,
Western
Wisconsin

BEE-KEEPERS!

Our 33d annual catalog for 1903 (92d edition) is now ready. Send for a copy at once. We have a full line of goods in stock, and can fill your orders promptly. Save freight by ordering from the St. Paul branch. **Bees and Queens.** Orders booked now for spring delivery. **Honey and Wax.** We handle honey and wax. Write for particulars.

The A. I. ROOT COMPANY

NORTHWESTERN BRANCH

1026 Miss. St., St. Paul, Minn.

Oregon Bee-keepers



For years we have supplied you with a portion of your requirements in bee-keepers' Supplies, for which we thank you. We are better prepared than ever to take good care of orders this season. We have acquired the business of Buell Lamberson's Sons, of this place, and have the agency for this State for

The A. I. Root Co., Medina, Ohio.

One carload is already on the way, and others will follow. If you require special goods or anything not usually kept in Western stocks, we can get it for you on our next car.

Seeds, Fertilizers, Trees, Garden Tools, Poultry and Bee Supplies.

Portland Seed Company,
Portland, Oregon.

Texas Bee-keepers.

STOCK.—Our warehouse is now stocked with a good assortment of Hives, Sections, Extractors, and other supplies direct from Medina.

PROMPTNESS.—We can therefore fill your orders promptly. Do not suffer long delay by ordering from some distant point but send orders here.

HEADQUARTERS for bee-keepers in San Antonio. Whenever you visit San Antonio you are invited to call at our office and make it your headquarters. See our display of supplies. Leading bee-journals on file for your perusal too.

WANTED.—Beeswax and Honey. Write for particulars.

The A. I. Root Co.,
438 West Houston Street,
San Antonio, Texas.

BEEKEEPERS *Notice*

We sell the Root goods here at Root's factory prices, which means the freight is paid to Des Moines, Iowa.

Immense stock and every variety of the best up-to-date goods now on hand packed from prompt shipment.

Satisfaction is guaranteed on every order sent us. Thousands have been pleased with their goods from us. We can satisfy you.

Write for estimates, sending list of what you will need, and get our discounts for early orders. We will save you money. Send to-day for 1903 catalog.

JOS. NYSEWANDER,
710-12 W. Grand Ave.
DES MOINES, IOWA.

— 26th Year —

Dadant's Foundation.

WHY DOES IT SELL SO WELL?—Because it has always given better satisfaction than any other. Because in 25 YEARS there have been no complaints, but thousands of compliments.

WE GUARANTEE SATISFACTION.—What more can anybody do? Beauty, purity, firmness, no sagging, no loss. **PATENT WEED PROCESS OF SHEETING.**

BEE SWAX WANTED AT ALL TIMES.—Send name for our catalog, samples of foundation, and veil material. We sell the best veils, either cotton or silk.

LANGSTROTH ON THE HONEY-BEE, Revised. The classic in bee-literature. \$1.20 by mail.

Bee-Keepers Supplies
of All Kinds.

DADANT & SON,
Hamilton, Ill.

Why Not



Place your order now? We will make you special prices for early delivery. We are headquarters in Central California for Root's Cowan Extractors, Sections, Weed Foundation, Smokers, etc., as well as a full line of local-made supplies. We can give you prompt service. We solicit your patronage.

0000

Madary's Planingmill
Fresno, California.